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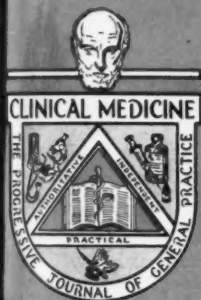
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VOLUME 52

NUMBER 6



JUNE
1945



Now — "shipyard eye" is a nation-wide problem

Epidemic keratoconjunctivitis has recently become a public health problem in various parts of the country. In some industrial areas it has even attained proportions of sufficient seriousness to affect our war production. Many cases have also occurred in office workers and occasionally have been noted in housewives.

Beneficial results have been reported on the use of Sulf-Opto in the treatment of this inflammation of the cornea and conjunctiva.

• Sulf-Opto is a stabilized ophthalmic solution of sodium sulfathiazole and dl-desoxyephedrine. It has been subjected to clinical trial by a number of representative ophthalmologists in the United States and has been found safe for use in the eye. Sulf-Opto is indicated in the

treatment of acute or chronic conjunctivitis in which the invading organism is one that is susceptible to the antibacterial action of sulfathiazole. It has been found useful in some cases of chronic blepharitis of bacterial origin

• In patients treated with Sulf-Opto, applied locally, symptomatic relief as well as marked clearing of the local manifestations of the infection have commonly been observed in from three to six days. The drops may be administered by the patient under the physicians' direction—a decided advantage these all-too-short days. Sulf-Opto is available in ½-fluidounce and 1-pint bottles. Literature available on request.

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CLINICAL

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VOLUME 52

JUNE, 1945

NUMBER 6

"Precision in Basal Metabolism"

By GEORGE PARKER, M.D., Peoria, Illinois.

THE most essential requisite of the reliable result in basal metabolism is precision. We shall discuss the significance of the term as related to the individual aspects of the subject.

Many tests fall into the category of the unqualified carrying with them the usual unfortunate confusion.

Responsibility for precision rests upon all persons concerned, the medical technologist, the clinician, and the patient.

It is the purpose of this editorial to offer suggestions designed to help those who often are dubious of the results they are receiving.

To eliminate unreliable tests the clinician must recognize the triple responsibility that rests upon him.

1. He, himself, must know enough about graph censorship to be able to accept or reject the graph given him; and he must insist upon receiving the graph itself; not just the minus or plus value.

The obviously erroneous must be returned to the operator with the admonition, "Basal rate not obtained," or "Result not satisfactory."

2. He must not refer patients indiscriminately to just any metabolism operator.

3. He must seek the services of a department which in the matter of equipment, mechanics, and technic protects

each patient by functioning according to the dictates of precision.

Such a department may be depended upon to produce a reliable result routinely.

Precision demands that the following recommendations be followed:

A. That such surroundings be provided as are conducive to satisfactory work; the windowless room must be eliminated.

B. That only an experienced medical technologist be permitted to perform the test unsupervised.

C. That no compromise of precision be risked by tolerating unscientific equipment.

D. That only a kymograph requiring a very large chart be permitted to be used.

E. That the supply of lime in the circuit be kept always fresh and unexhausted.

F. That the medical technologist be required to service the mechanism completely before each test.

G. That a recognized, well defined, scientific technic be acquired and used.

H. That each patient receive minute and complete instructions according to the recommendations outlined in the technic.

I. That each graph be recorded throughout a long or a prolonged breathing time, such as fourteen or fifteen minutes, allowing the patient to effect

two or more tests in one, a procedure much more satisfactory than that of the repeated or double test.

J. That no calculation be made upon a doubtful test and no report submitted; that the patient when the necessity arises be required to repeat his effort as often as is indicated until he produces an acceptable accomplishment. The occasion for repetition occurs very seldom,—

almost never.

Such are the inviolable requirements of precision as related to the individual aspects of the science.

When all physicians who refer patients for the test take it upon themselves to insist upon the foregoing requisites they will no longer be annoyed by the unqualified in basal metabolism.

Alliance Life Building

Pilonidal Cysts: Outline of Surgical Treatment

By R. L. CLARK, Major, M.C.* Dayton, Ohio

1. Selection of Patients

- a. Acutely infected (Grade IV) pilonidal cysts — drained only.
- b. Pilonidal cysts with quiescent infection (Grade II or Grade III) — excision and primary closure.
- c. Pilonidal cysts non-infected (Grade I) — excision and primary closure, when any treatment is indicated.

2. Preoperative Régime

- a. Non-residue diet.
- b. Establishment of a therapeutic blood level of sulfonamides.
- c. Enemas until clear 2 days pre-operative.
- d. Sterile preparation operative field — 24 hours.

3. Operation

- a. Careful aseptic technique.
- b. Preservation of all possible skin.
- c. Complete excision of cyst.
- d. Absolute hemostasis.
- e. Use of fine plain catgut — cotton or silk sutures.
- f. Sulfa drugs not used in wound.
- g. Simple closure in layers without tension, undercutting skin when necessary, passing just superficial to gluteal fascia.
- h. Closure without dead space.
- i. Elimination of stay sutures.
- j. Exact coaptation of skin edges.
- k. Sulfa powder used externally for anhydrous effect. Prevents maceration and superficial skin infections.

- l. Pressure dressing (Mechanics waste).

NOTE: Clotted fibrinogen solution may be added to speed wound healing.

4. Postoperative Régime

- a. Bed rest for first week.
 - b. Non residue diet for first week.
 - c. No laxatives — bowels quiescent for 5 days if possible.
 - d. Change dressing first week only if necessary. (Temperature elevation, excessive pain, drainage, or maceration require observation of wound.)
 - e. Heat lamp to keep surrounding skin dry — after first dressing.
 - f. Stitches removed from 7th to 10th day.
- If hematoma should form, evacuate it and do not open wound.

Advantages Offered by Use of Coagulated Fibrinogen

- a. Insures hemostasis.
- b. Fills dead space.
- c. Seals off the depth of wound, coaptates the cut surfaces.
- d. Fixes the skin flap to the sacral fascia.
- e. Speeds capillary formation and thus furnishes the mechanism for carrying off any excess serum.
- f. Speeds acutal repair by furnishing framework over which fibrous tissue can grow and insures even, uniform and complete healing of wound. Recurrences due to incomplete healing, following complete closures have been eliminated.

*AAF Surgical Consultant, N.E.-U.S.A., Aero Medical Laboratory, Surgical service of Major R. L. Clark, Wright Field.

Anesthetic Emergencies*

MOST anesthetic emergencies can be prevented, or easily treated before they endanger the patient.

A very few simple procedures will suffice to prevent or abort all but the most irreversible accidents seen during anesthesia. The essential disturbance is almost always a failure of oxygen to reach the alveoli of the lungs, or of sufficient oxygenated blood to reach the brain. *Anoxia of the vital centers* is the ultimate harmful result.

Anesthetic accidents best illustrate the present neglect of practical respiratory physiology in medical school and hospital teaching. It is to our profession's shame that fire-department and police resuscitation squads are still being called by doctors and hospitals to revive patients. Resuscitation should seldom be required in the first place, and when it is, it should be done by those at hand, in the few precious moments when the patient can still survive.

During anesthesia one sees, in an acute form, the common disorders of external and internal respiration. They are grouped below in rough order of their relative frequency.

Relative Frequency of Emergencies

1. Respiratory Obstruction.

- a. Pharyngeal (relaxed tongue or pharyngeal muscles; foreign material, vomitus, blood, mucus, pus).
- b. Laryngeal (glottic spasm from hypoxia, irritant vapors, mucus, blood and reflex activity; glottic edema).
- c. Lower tract (foreign matter,) mucus, blood, vomitus, pus, bronchial spasm.

In all of these, adequate oxygen fails to reach the lungs. Correct the obstruction before the deficiency of oxygen itself causes laryngeal spasm or paralysis of the vital centers.

2. Respiratory Depression.

- a. From sedative drugs (barbiturates, opiates, avertin).
- b. From anesthetic drugs (pentothal, cyclopropane, deep ether, avertin).
- c. As result of the hypoxia of obstruction.

Depression removes ability of respiratory mechanism to compensate for partial obstruction or circulatory depression.

3. Circulatory Depression.

- a. *Syncopal* (usually during local, regional and spinal anesthesia).
- b. *Shock* (acute progressive peripheral circulatory failure).
- c. *Hemorrhage* (effect may be either syncope or shock).

Resultant intracranial anoxemia will depress and damage all vital centers, which cannot function without adequate oxygen.

4. Central Nervous System Disturbances.

- a. Twitchings, spasms and convulsions (during both general and regional anesthesia).
- b. Coma (during regional anesthesia).

Convulsive muscle activity usually leads to hypoxia, when respiratory and laryngeal muscles go into spasm. Coma is usually accompanied by respiratory depression.

Respiratory Obstruction

Noisy breathing is always obstructed breathing. Mild obstruction leads to severe obstruction, since hypoxia causes laryngospasm. It becomes difficult to maintain deep anesthesia; vomiting or coughing may occur. Hypoxia may lead to shock, especially in the sick patient.

Pharyngeal Obstruction

- a. Elevate chin (and with it, the tongue).
- b. Change position of the head.
- c. Insert pharyngeal airway tube.
- d. In open mouth operations, or during pentothal, hold tongue forward with gauze, towel clip, or suture.
- e. Where possible, turn patient on his side; tongue and foreign matter will then move forward in mouth.
- f. For blood and vomitus, lower head of table; use aspirator.

Laryngeal Obstruction is the result of the "watch-dog action" of the vocal cords to prevent inhalation of irritant vapors or aspiration of foreign matter. Too rapid anesthetic induction, and blood and mucus in the throat are the commonest irritants. Hypoxia from any cause, and many forms of surgical stimulation, will bring on glottic spasm particularly in light anesthesia.

- a. Induction should be gradual and smooth, to avoid irritation and mucus production.

*Submitted by a physician in the Armed Forces whose name, at present, must be withheld.

- b. Correct pharyngeal obstruction before it leads to hypoxia.
- c. Remove mucus, blood and pus by suction before it brings on spasm.
- d. Vomiting requires the promptest action. Lowering the head sharply, or turning patient on his side, and rapid suction are essential if spasm or aspiration are to be prevented in time. *Vomiting may be silent—suspect it in all cases of laryngeal spasm.*
- e. Ask the surgeon to avoid stimulating procedures in light anesthesia. This is most important during pentothal, where the additional hazard of respiratory depression is also present.
- f. Increasing the pressure in the breathing bag will often help overcome glottic spasm or edema.
- g. Tracheal intubation is often lifesaving. It should be done prophylactically much oftener than at present. Don't wait to use it as a last resort. It will then be too difficult to perform without trauma. In such a dilemma, one must wait till impending death relaxes the jaw and larynx, and act with extra speed to inflate the lungs with oxygen from a breathing bag, or with air from one's own lungs, before death occurs.
- h. Rarely, tracheotomy is needed. If intubation with a nasal or oral tube is impossible, it is better not to delay opening the trachea.

Lower Respiratory Tract Obstruction

- Very prompt measures are needed, if any foreign material is aspirated into the lower tract. Bronchial spasm calls for considerable ingenuity, both in deciding its cause and in treating it.
- a. Lowering the head sharply may allow thin fluids to escape into the pharynx.
- b. Aspiration through an endotracheal tube is often effective.
- c. Bronchoscopy may be needed, but is not as readily available as aspiration through a tube.
- d. Lightening anesthesia may result in the offending material being coughed out.
- e. Mixing helium with the anesthetic mixture may help overcome the effect of bronchial spasm.
- f. Atropine will occasionally relieve spasm. It should be given intravenously.
- g. Avoid adrenalin during general anesthesia. It will cause fibrillation or severe arrhythmia.

Respiratory Depression

Respiratory depression is insidious. The usual report that "the patient has stopped breathing" is more likely to indicate neglected partial or complete obstruction during the depressed state, than true primary respiratory failure.

- a. Moderate depression may be compensated for by enriching the respired air with oxygen till the drug effect is dissipated.
- b. Severe depression calls for assistance to breathing, by means of mouth-to-mouth inflation, with the breathing bag of the gas machine, or by the use of respirators.
- c. Manual artificial respiration is rarely adequate, except as a stop-gap till more effective inflation can be performed.
- d. During artificial respiration, be sure the air passages are wide open. Use a tracheal tube if necessary.
- e. Stimulating drugs and carbon dioxide are rarely effective alone in the severe case, where they might seem the most needed.

Circulatory Depression

It is not immediately necessary to decide whether the patient is developing shock or not. In all forms of circulatory depression, our first concern is the oxygen supply to vital centers. The sluggish intracranial circulation should be given extra oxygen to support the centers while we decide whether stimulants or blood replacement are needed.

- a. Enrich the respired atmosphere with oxygen. This is just as important during regional and intravenous anesthesia as during inhalation types.
- b. Since respiratory depression is often present too, assist the breathing by rhythmic compression of the breathing bag, if the exchange is inadequate.
- c. Have an intravenous infusion begun at once, with any isotonic solution available. This keeps the best route of therapeutic injection open for subsequent use.
- d. If the pulse is rapid and thready, and the patient's general appearance poor, substitute plasma or blood for the original infusion.
- e. If the pulse is slow, and the general condition not alarming, this syncope reaction can be readily corrected by such drugs as neosynephrine ($\frac{1}{2}$ mgm. IV., or 3 mgm. subcutan.), or ephedrine (1-3 mgs. I.V., or 25 mgm. subcutan.). Adrenalin is

rarely needed; don't use it intravenously or by cardiac puncture.

- f. Shock, without hemorrhage, may easily result from long, deep anesthesia in the presence of surgical trauma. Plasma is indicated.
- g. For massive hemorrhage, blood should be given at the same rate as it was lost.
- h. Intermittent manual compression of the heart will often restart its beat. If the abdomen is not already open, an incision in the epigastrium is occasionally justified for cardiac compression.

Central Nervous System Disturbances

Twitchings, spasms and convulsions are prone to occur in inhalation anesthesia during hot, humid weather, in younger patients with severe infectious intoxications. The precipitating factor is not the direct action of the anesthetic drug—rather the disturbance of internal respiration they cause. In deep prolonged anesthesia with shallow breathing, respiratory acidosis results from chronic accumulation of carbon dioxide and from hypoxia. The feverish dehydrated child has no alkali reserve to combat this. We must avoid the cause, by caution in the circumstances just stated, by the avoidance of carbon dioxide accumulation in the body, and by fortifying the patient with adequate alkaline fluids before and during anesthesia.

Convulsions and coma during regional anesthesia are also essentially a problem of respiration. With the first, respiratory spasm must be treated before it becomes complete, by administering oxygen effectively. In coma, total vital function collapse demands that we treat respiratory and circulatory depression, as well as that of higher centers.

- a. At the first warning of convulsions (twitchings about the eyes and mouth, or in one limb) stop the use of locally acting drugs, or lighten general anesthesia.
- b. Enrich the atmosphere with oxygen with a constant excess flow, to be sure that rebreathing is not occurring. Even the best CO_2 absorbers on gas machines allow some CO_2 accumulation.
- c. Assist respiration by intermittent inflations with oxygen, if there is inadequate exchange.
- d. After satisfying oxygen demand, intravenous barbiturates may be given to stop convulsions.
- e. Give buffer solutions, such as Hart-

man's, intravenously after convulsions.

- f. Coma usually vanishes when anoxemia of the vital centers is treated as outlined under circulatory depression, above.

Fallacies

1. Drugs and carbon dioxide to stimulate breathing. They usually depress the anoxic respiratory center, and they delay the active use of oxygen and artificial respiration.
2. Dependence on mechanical respirators. They are no better than the breathing bag of the gas machine, more expensive and less controllable than a simple bag-mask- O_2 cylinder apparatus.
3. Mere enrichment of the respired air with oxygen is so often done, when active intermittent inflation of the lungs is needed.
4. Intracardiac injections. These kill more patients than they cure.
5. It is all too commonly believed that the following exist and account for most anesthetic fatalities:
 - a. Status thymico-lymphaticus.
 - b. Specific drug sensitivity.
 - c. "Acts of God."

These labels indicate ignorance of fundamental vital function physiology. The true cause will almost invariably be found to be respiratory obstruction, respiratory depression by drugs or hypoxia, overdose of drugs, excessive absorption or intravenous injection of locally acting drugs, or a combination of such factors. We should not blame the patient, the drug or Heaven for our errors in recognition and early treatment of disorders we ourselves cause.

Summary

Harm seldom comes to the patient if we maintain an adequate oxygen supply to the vital centers while the body itself combats the basic disorder.

1. Maintain a 5-minute recorded observation of pulse, respiration, blood pressure and related data, that dangerous trends may be noted and treated while there is yet time for effectiveness.
2. Be sure that an atmosphere of at least 20% oxygen concentration moves in and out of the lungs at all times. Observe this at the breathing bag, or by the hand or ear at the mouth. The air passages must be open, the breathing noiseless.

3. Enrich the atmosphere with oxygen whenever there is obstruction or depression of breathing, circulatory depression, convulsions or coma.
4. When the volume of breathing becomes too shallow, assist that function by manual inflations with some type of breathing bag.
5. Should breathing fail, immediately begin intermittent inflation of the lungs by mouth-to-mouth breathing, with a bag and face mask, or with

the breathing bag of the gas machine. Be sure that the chest is actually freely expanding with each inflation.

6. Use safe circulatory stimulants, adding replacement therapy to saline, plasma or blood as soon as indicated by a failing pulse.
7. Above all, remove the cause of trouble when possible, be it drug, anesthetic, or obstruction to free breathing. Delay will kill the vital centers. Be prompt.

Chemotherapy in Tuberculosis: Present Status*

There has been an increasing interest on the part of physicians throughout the country in the chemotherapeutic approach to tuberculosis. With the advent of the various sulfa-drugs and their striking therapeutic effect on certain bacterial infections, research workers were spurred to study the effect of these drugs on tuberculosis. These studies on the sulfa-drugs with respect to tuberculosis were disappointing, but led to the introduction of a new series of drugs — the sulfones.

Feldman, Hinshaw, and Moses found by animal experimentation on guinea pigs that certain of these drugs had the very definite and striking ability to actually arrest the progress of otherwise uniformly fatal tuberculosis, even when treatment was delayed for six weeks after inoculation. Such striking results had never before been attained in all the years of research in the field of tuberculosis throughout the world.

Promin

The first of these sulfone compounds recognized to be of therapeutic value in animals was Promin (sodium p, p' — diaminodiphenylsulfone n, n' di dextrose sulfonate). After further thorough animal experimentation, a clinical trial of the drug on human beings seemed definitely indicated. With the close collaboration of Doctors Hinshaw and Feldman of the Mayo Clinic a group of patients at nearby Mineral Springs Sanatorium was started on the drug in March 1941.

It is our belief that the drug had a favorable effect on the course of the disease in those patients who exhibited predominantly fresh, exudative lesions.

No over-nite cures were noted to be sure, but 25% of the patients in the group revealed more rapid improvement as shown by roentgen examination than was to be expected from a routine rest regimen alone.

Reports in the literature from investigators in England working independently confirmed our impression by drawing similar conclusions. Investigations at Muirdale Sanatorium, Milwaukee and the Wisconsin State Sanatorium likewise indicated encouraging results from Promin. Hyman, Zucker, and Pinner using the drug intravenously in large doses for a short period of time concluded that no favorable effects on the disease were obtained with this method. Investigators at Glen Lake Sanatorium, Minneapolis and Mayberry Sanatorium, Detroit on the basis of a small experience concluded that the toxic effects of the drug out-weighed any possible benefits.

Tuberculosis of Bone

We have, in addition, a group of seven cases of bone tuberculosis with draining sinuses, which have been treated with Promin orally and with Promin jelly locally. In four of these the drainage stopped within two months after administration of Promin therapy. In the other three cases improvement was definitely more rapid than would normally be expected. This is, of course, a very small series and is not intended as being conclusive of any definite therapeutic achievement. We are encouraged, however, to enlarge the series with similar cases and to continue our studies in this direction.

Toxicity

Perhaps the chief factor preventing a more widespread use of Promin is its toxic properties. Nearly two-thirds of

*Abstracted by R. L. Gorrell, M.D., from a paper given by K. H. Pfuetze, M.D., before the Colorado Members, American College of Chest Physicians at Denver, Colorado, Sept. 1944.

our patients were unable to take the drug in minimal doses for any length of time. Its use tends to cause a drop in hemoglobin in the majority of patients, and in a few cases leukopenia was noted as well. In addition anorexia and restlessness were a rather common accompanying complaint.

Diasone

In 1942 the Abbott Laboratories developed Diasone (disodium formaldehyde sulfoxylate diaminodiphenylsulfone.) Investigations with this drug in guinea pigs were sufficiently encouraging to justify its clinical trial on human beings. In January 1943 Petter and Prenzlau began its use on patients at Lake County Sanatorium, Waukegan, Illinois. They reported favorable results and in March 1943 we at Mineral Springs Sanatorium began its use.

Before the recent College of Chest Physicians meeting in Chicago we reported our results of fourteen months clinical investigation of Diasone in the treatment of pulmonary tuberculosis. Our report was concerned chiefly with a series of 36 patients, who had received an average daily dose of .9 grams or more for a period of 120 days or longer. The total number of days treatment ranged from 120 to 399 days. The average daily dose of all the patients was 1.70 grams. The group included a representative cross section of patients who were not receiving adequate collapse therapy. Before treatment was initiated four cases had been classified as minimal, 15 as moderately advanced, and 17 as far advanced. The types of disease process included exudative, fibroid and caseous lesions. Aside from the chemotherapy the patients received routine sanatorium bed rest and general care.

We concluded that Diasone fell considerably short of our original hopes for a chemotherapeutic adjunct in the treatment of tuberculosis in men. Only two patients in the entire series showed what might be considered as marked or unexpected improvement as measured by serial roentgen examination. Eight of the patients showed definite spread of their disease process while taking the drug. Ten showed moderate improvement, seven slight improvement, and in nine no change could be demonstrated by repeated x-ray studies.

We found that Diasone was somewhat less toxic than Promin in similar doses to the hematopoietic system, but it too, is accompanied by undesirable side-reactions. A reduction of the hemoglobin occurred in 18 of the 36 patients, ranging in degree from 6 to 24%. Nervous-

ness, irritability, and anorexia were not uncommon. One severe reaction reported elsewhere include fever to 104° F., angina, nausea, vomiting, and a generalized maculo-papular eruption which became vesicular and finally extensively exfoliative.

Some investigators have taken occasion to stress the extreme cyanosis present in guinea pigs resulting from the use of this drug. Concern has been shown regarding the possible deleterious effects of this phenomena occurring in patients receiving Diasone. We observed cyanosis in all but three of our 36 patients. In 23 cases it was mild; in eight it was moderate; and in two cases it might be called severe. However, the degree of cyanosis seemed to bear no correlation to the other undesirable side-reactions which occurred nor have we observed any harmful effects from cyanosis alone.

Promizole

A third sulfone drug which also has shown considerable promise in animal experimentation is Promizole (4, 2' - Diaminodiphenyl-5-thiasolesulfone). Our clinical investigation of this drug has not been completed but certain facts have become apparent to date.

It is much less toxic in man than either Promin or Diasone and thus can be given in much larger dosage. A tolerated daily dose of 10 to 12 grams or more for several months is not uncommon in our experience. Clinical studies now in progress would indicate that Promizole falls distinctly short of the ideal remedy. In renal tuberculosis it appears to give some symptomatic relief but in no cases to date have we noted a disappearance of tubercle bacilli from the urine. Five patients with tuberculous meningitis and two patients with miliary tuberculosis have received Promizole without benefit. We regret that it is too early to report anything definite regarding its effect in pulmonary tuberculosis.

With so many workers searching for an effective chemotherapeutic agent against tuberculosis it would seem advisable that certain standards of clinical investigation be followed by the various investigators as each new product appears.

Criteria for Chemotherapy

First, before any drug is used in man it must be thoroughly investigated in animals; this study to include both its therapeutic effectiveness and toxic reactions. It should be stressed that this is the method by which all of the great advances in chemotherapy have been achieved. When a better or easier

method has been evolved then the method of guinea pig trial may be abandoned.

Second, it must then be tried cautiously on patients whose consent for such trial has been obtained after fully acquainting them as to the purpose and possible dangers of such a study. This must be done in an institution where adequate facilities for observation and laboratory control are available.

Third, we believe that much time and effort can be saved by careful selection of the cases to receive chemotherapy. The fresh exudative lesion obviously stands to gain the most by any successful chemotherapeutic agent because of the histo-pathologic process present. In such cases there is a minimum of tissue destruction, and the blood supply to the diseased area, which carries the chemotherapeutic agent, is less impaired. The sulfa-drugs for example, are very effective in an early case of pneumonia, but are of little value in a case of long standing lung abscess. For the same reason we can scarcely expect any startling, immediate results in the closure of an old chronic tuberculous cavity with chemotherapy.

We suggest, therefore, that in our preliminary investigations our attack be limited to those cases which demonstrate either an initial exudative spread or a similar progression secondary to an old established lesion. In this regard we fully appreciate that it is just such fresh lesions which tend to improve under a routine rest regimen alone. Nevertheless, if a drug has a really favorable effect on the course of the disease, a careful study of a large series of such cases should reveal a rapidity and uniformity of improvement not otherwise expected. It goes without saying that these cases must be drawn from a group in which no effective collapse measures have been employed. We recognize the desirability of having a group of similar patients, not receiving chemotherapy, to serve as a control group. In the larger sanatoria such a plan would usually be feasible and should be carried out whenever possible. In a large institution a carefully planned program intensively carried out for six to eight months should reveal whether or not a drug is therapeutically effective. We do not believe that a drug should be used in those cases where some conventional and accepted therapeutic procedure is indicated, such as pneumothorax or thoracoplasty for example.

Fourth, Dosage: In our experience considerable time was spent in determining what we felt might be a minimal

therapeutic dose, and at the same time avoiding what might be a toxic dose. A drug cannot be discarded as being ineffective until ample trial of its maximal tolerated dose proves it such. The method of administration should be similar to that which has achieved results in experimental animals. We have found that tolerated doses vary considerably with different patients.

Fifth, In order to investigate the effectiveness of each new promising drug it would be advisable for several sanatoria in different parts of the country to carry on studies simultaneously using in general the same technique of administration. In this way each drug could be evaluated in the shortest possible time for at best months of study on many patients are necessary for such evaluation.

It is also possible that some anti-biotic similar in nature to Penicillin may be discovered which will prove effective against tuberculosis.

Summary

It is our opinion that Promin, though probably of value in some cases, is too toxic for widespread general use. Diasone, though less toxic than Promin clinically falls far short of our original expectations. Promizole, which is much less toxic than either of the other two, is still under clinical investigation thus precluding any accurate evaluation at this time.

Other compounds are at present undergoing animal and laboratory experimentation. Those showing promise will require clinical investigation. We cannot and must not shirk this responsibility. With the whole problem of chemotherapy in tuberculosis thus in a state of flux it is imperative that we remain open-minded to every new advance, critical of unproved assertion but fully alert to incorporate and develop promising compounds. We believe that at last we have our foot in the door, so to speak, and we have every right to assure that in time a drug or some other agent will be found which will closely approach our exacting goal. The recently organized tuberculosis unit of the United States Public Health Service is vitally interested in this problem and has promised its close cooperation and active help in working toward its solution. It may be next year, or five, or ten years hence before success will crown the endeavors of the many men engaged in this field but certain it is that the goal is worth many times the effort.

[Promin and Promizole are experimental products of Parke, Davis and Co. Diasone is from the research department of Abbott Laboratories. Ed.]

The Clinical Indications for Colloidal Lipids in the Control of Toxemia

By WILLIAM WALLACE YOUNG, M.D., Philadelphia, Pa.

IN an article of this sort, one would prefer to develop the thesis slowly, step by step, accompanying each with appropriate references to the literature. Under wartime restrictions, this is denied us. Our task will be to crowd into a brief report a therapy which has been evolving for seventy odd years.

This review is a companion to one entitled "Dark Field Microscopy in infectious Diseases" recently presented in *Clinical Medicine** For an appreciation of what is reported here, we refer the reader to the previous paper.

The use of lipids in the control of toxemia is essentially a substitutive therapy, in the category of intravenous fluids in dehydration, plasma in hypoproteinemia, whole blood after hemorrhage and so on. Equipped with a dark field microscope and a knowledge of its use, the therapist is prepared to employ this therapy with absolute accuracy.

The equipment is just as simple as that employed in giving plasma, consisting of needle, tubing, and burette. One trained in the technique of intravenous work can administer this agent.

There are two preparations of colloidal lipids which have proven themselves to be reliable in the hands of competent clinicians for well over a decade of intensive use. The English have used a concentrate of a cholesterol ester providing a stable sol of 5% lipid stabilized in 0.2 per cent sodium oleate. This preparation is administered hypodermically in doses of from 10 to 25 cc. at intervals of three to four hours. It keeps for years at room temperatures. It is sold in rubber stoppered bottles of fifty cc. capacity. In this country, physicians prefer the intravenous method because of the quicker effect and the elimination of frequent injections. The agent known commercially as "Lipo-sol,"† is a stable sol (see definition at end) at room temperatures or higher, in which the lipid constitutes ½ percent and glucose 5 percent. Manufacturing methods have eliminated the necessity for any stabilizing substance.

These two preparations can be considered as entirely physiologically acceptable to the body. They contain nothing alien to it. The average dose of the

intravenous agent is 250 cc. (1.5 gr. cholesterol ester and 7.5 gr. glucose). As much as four averages doses has been given in the form of a continuous infusion. To one unacquainted with colloidal chemistry, the quantity of lipid seems ridiculously small but, because of the surface development common to all sols and the fact that the therapeutic effect is the result of surface adsorption, the importance of state of, rather than quantity of matter, becomes understandable.

There Are No Contraindications To This Therapy

There are no dangers associated with its use. It has been administered in cases of advanced heart disease, ascites, edema, eclampsia, malignant tumors, hepatitis and uraemia, without any demonstrable ill effect.

In its essential feature, the sol is a concentrate of a single element found normally in the blood, the chylomicron. This being the case, it is not surprising that contraindications should be minimal.

Indications For Use

Colloidally speaking, any toxemia of an electro-positive kind is an indication. This statement is of little aid to the clinician. As has been said before, the dark field is the only reliable guide. Colloidal lipids above all should never be regarded as a bacteriocidal or bacteriostatic agent except indirectly. They act as a toxophilic buffer between the irritant and the vital cell. As such, they can materially contribute to the more efficient functioning of the organs, tissues and cells that form the defense and detoxifying systems of the body.

Therefore, the clinical indications for colloidal lipids will cut across lines of bacteriological diagnosis and include conditions of diverse character but which present one common feature, among others, and that is a toxemia. The greater the toxic aspect, the more imperative is the indication for the buffer and there is no other intravenous or any other kind of agent available to the physician which is of comparable merit in this role.

The indications for the use of colloidal lipids would then be protean, including, etiologically speaking, those of an electropositive nature. The heavy metals rank high in this category; lead, mercury and arsenic. The practice, among lead

*April, 1945—pp. 109-113.

†Manufactured by J. C. Shay, Inc., of Philadelphia, Pa.

workers, of drinking quantities of whole milk every day is an empirical example of the value of lipids in protecting against lead poisoning. The use of lipids, intravenously, in acute lead poisoning is theatrical.

The poisonous effect of certain drugs is dramatically neutralized by this therapy, notably the sulphonamides, as regards the convulsive, the hepatic, renal or hematopoietic symptoms. The effects of iodine, sedatives and certain commercial poisons are effectively controlled.

Snake venom and such insect venom as tarantula have been proven *in vitro* to be neutralized by the lipids. The examples of this therapy *in vivo* are limited but promising.

Systemic toxins, as those in eclampsia, are not always electro positive but where the dark field proves the absence of chylomicrons, the clinician can expect prompt results. In uraemia, the lipids will prove of definite although but temporary benefit, influencing the nitrogen level of the blood for a short time.

Since the exo- and endotoxins of practically all bacteria behave as electro-positive, toxins, intravenous lipids can be employed to advantage in a wide variety of infections. Obviously, since in the great majority of instances, the patient's own defense mechanism is adequate to the need, a therapy of this nature is not to be regarded as a routine procedure. But when the degree of toxemia becomes a distinct threat as demonstrated by the scope of, or the intensification of, the symptoms roughly grouped by Pottenger as toxic (sensorial depression or delirium, albuminuria, fall of white count without associated improvement, secondary anemia, neuritis, and so on) there is a clear cut indication for the use of colloidal lipids. Such conditions are met with in a wide variety of infectious states: Scarlet fever, otitis media, abscesses, nephritis (with hematuria and anuria), pneumonia, typhoid and others. In endocarditis, clinical results have been limited and temporary.

In the virus conditions, classically unassociated with much toxemia, this therapy is of minor importance. In la grippe, on the other hand, it is definitely beneficial.

In a series of glaucoma and mastoid cases, it was proven that operational hazards and post-operative complications were definitely minimized by bringing the blood lipids to normal, as seen by the dark field, before risking operative interference. This observation applied equally to other fields of surgery. Post-operatively, healing is advanced and sup-

puration is diminished by this therapy, if it is indicated by dark field.

Some experimental work has been done with lipids in typhus and one or two reports suggest it has merit in the selected case of malaria but the amount of work in these fields is, as yet, too limited to make any assertions.

There is a wide variety of unique, unusual or puzzling clinical syndromes which do not readily fit any accepted category, that constantly present a problem to the physician; myositis, fibrositis, infectious arthritis, neuritis, idiopathic this or that. In many such instances, the dark field and lipids are a therapeutic boon.

In conclusion, let us reiterate that we have had to present a streamlined synopsis of a therapeutic field which has been developing for over half a century and that is far from completely explored. Into these few paragraphs we have compressed only reliable facts, have indulged in no pious hopes or theories. Here is nothing new or untried.

1419—Spruce Street

Additional Notes

This is a very interesting editorial on a mode of treatment which is not widely known. Unfortunately, corroborative case histories are difficult to obtain. To clear up several questions raised by the readers of the manuscript, the author writes:

1. The concentrate is prepared by homogenization under many thousands pounds pressure. The technic is given in a book entitled "Technical Aspects of Emulsions" by Frazier and Walsh (published by Harvey of London, 1935). The same technic was employed, but not as successfully by Myer and Blumberg of Johns Hopkins. With this method, it is necessary to use a stabilizer such as sodium oleate.

To prepare the material for intravenous use, lanolin (because it is rich in cholesterol esters, is used as the crude source. This is subjected (at selected temperatures) to selected fat solvents to extract only the substance desired. This is then mixed with water in which fat is not soluble, at controlled temperatures, to obtain the stable sol. The American Medical Association conducted a chemical test of this material and found it to contain glucose five percent, lipids in colloidal suspension one-half percent and distilled water, the pH between 5 and 6, sterile, free of nitrogen or any other organic or inorganic material. The dark field shows both to be true sols. (see definition below).

2. I chose Pottenger's definition of toxemia as I know of none better for clinical

use. Secondary anemia is not uncommon in association with debilitating diseases and acute toxemia, and is considered by many authorities to be the result of poisonous inhibition of the blood forming elements.

Likewise, in many severely toxic conditions, neuritis and subsequent paralysis occur (diphtheria, as an example). The classical example of toxic anemia is that provoked by arsenic, of toxic neuritis that provoked by lead. Similar effects are to be obtained in infectious conditions. This therapy is not indicated in the treatment of anemia due to pure failure of metabolism, assimilation, psychosomatic and other non-toxic causes.

3. The term 'sol' is purely technical, applying to colloidal chemistry. It does not signify a solution as with crystalline materials in water. Its definition can be found in any good text.

Sol: a state of matter in which the discontinuous phase, in this case the lipid, is dispersed, stable and permanent, in physical size of one micron diameter or less; each particle exhibits energetic brownian motion.

A gel, as an emulsion, on the other hand, exhibits no brownian motion, the surface charge is small, permanency is short lived except as the result of a stabilizing agent and the particles are of many microns diameter.

I have some of both the concentrate and the other sol, made in 1931, which are still unchanged in activity and size of particle.

4. The great majority of the patients treated were private. Some of my colleagues and I have used this method for twelve years so that we have had ample time to observe. Dr. Haines reported on

100 cases of mastoiditis (*Hahnemanian Medical Journal*) Dr. Holland, now a major in the Army Medical corps, reported on a series of mental cases. Dr. Boericke and I reviewed a series of assorted infections.

The war has interrupted our work and that of our friends, many of whom are in the services. Many cases naturally have been forgotten, but the names of many hospital and private patients have been remembered and their records are in existence.

I personally have a great distrust of the bandwagon method of ballyhoo, and have been content to see this method develop slowly and healthily.

"I wrote to the company which makes Liposol asking for the names of some of the users. I quote, 'Regret to advise. . . not at liberty. . . is being sold in twenty states, Canada and Hawaii.'"

"In this city, I can name six men using this treatment who are busy practitioners but are not teachers. They don't bother with records."—W. W. Young, M.D.

[Records are the foundation for any advance, in medicine or any other science. Clinical impressions are important, and are often difficult to confirm with records, but if records are not kept, it is easy to assume that any improvement is due to the treatment being used at that time. If records are not kept, the patient is treated for the diagnostic impression of the first visit. Look over your case histories a few days after they are taken, and see how often you note that you have overlooked an important test or diagnostic possibility, and how many times you would change your mind regarding the patient's condition.—Ed.]

Drugs and Recommended Syrups

| Type of Drug | Recommended Syrups |
|---|--|
| Saline: Chlorides, iodides, salicylates, bromides, citrates, acetates. | Syrup of Glycyrrhiza, USP. Comp. Syr. Sarsaparilla, USP. Syrup of Raspberry, NF. |
| Iron Salts: Ferrous Sulphate, Iron and Ammonium Citrates. | Syrup of Cinnamon, NF. Syrup of Citric Acid, USP. Syrup of Orange, USP. |
| Bitter Drugs: Quinine salts. Bitter alkaloids. | Syrup of Cacao, NF. Syrup of Glycyrrhiza, USP. |
| Acidulous or Slightly Bitter Drugs: Ephedrine salts, thiamine hydrochloride, codeine salts, atropine, syrup hydriotic acid. | Syrup of Cherry, NF. |

—J. Maine M. A. Nov. 1943.



GRADUATE COURSE

Artificial Respiration: Its Importance to You

On the bathing beach, near a fire, in your office, operating room or in your patient's home, breathing may stop. You must know how to give help at once, with your own hands. Patients have died while waiting for the fire department, while waiting for the resuscitator to be set up, while unskilled first aiders are attempting their own version of artificial respiration, while pulmotors are interfering with the patient's attempts at rhythmic respiration, while stimulants

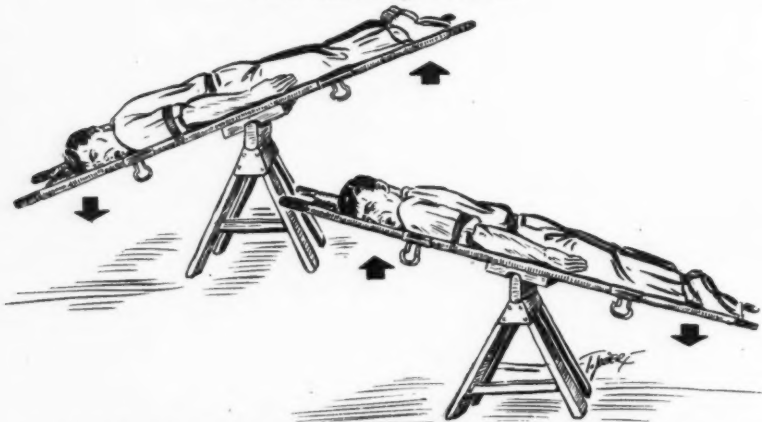
are being injected subcutaneously, while the operating team excitedly goes into action.

Every physician and surgeon, whether specialized or not, must know the few fundamentals of artificial respiration.

Simple Effective Methods

1. The rocking method (Eve): Most efficient.
2. The prone pressure method.
3. Mouth to mouth breathing.

The Rocking Method



The patient is placed and tied on a stretcher, board, ladder, door, two paddles or any other long object and rocked to and fro over a fence, saw horse, barrel, overturned boat, box, or over a pipe or stick held by two men.

Ten complete rocks a minute usually gives good ventilation. If no apparatus listed above is handy, begin Schafer's prone pressure method at once or have two men stand facing each other, grasping each other's hands and lay the patient face down on their forearms. By rocking from the hips, the men can move the patient through ten rocks a minute until a board is found.

The patient should be rocked to a 45 degree angle, which is more than the angle shown in these figures. It is also better to have the hands tied above the head, rather than at the sides, as shown here.

Suggestions

The patient is not dead merely because his heart sounds cannot be heard with a stethoscope. The lay public has an unfounded faith in the stethoscope but the physician must know that the thick chest wall of an adult prevents auscultation of a feebly beating heart. Also, in some persons, the pulse is difficult to palpate even when strong.

Don't waste time examining the patient. The only thing that can be done to a patient who is not breathing is to stimulate respiration (intravenous plasma may be of value, but is usually not available for most emergencies; massage of the heart through an abdominal incision may be possible in the operating room).

Only rigor mortis or cooling of the body should stop attempts at artificial respiration (Jex-Blake).

Persist in artificial respiration for four hours (longer, if there are any attempts at respiration by the patient).

"Stimulants"

Don't waste time injecting stimulants subcutaneously, as the slow circulation will delay their transit to the brain. Severely depressed patients may be poisoned by stimulants. (See pharmacologists discussion). A more direct reason is that artificial respiration is delayed or only halfheartedly followed if one depends upon an injection.

What Should Be Done First?

See that there is nothing in the patient's mouth or throat (false teeth, gum, tobacco, secretions) by exploring with the fingers. The tongue will fall back into the pharynx and block respiration, so it must be pulled out of the back of the mouth or the patient should be placed face down so that the tongue will fall forward automatically.

If the patient must be kept on his back, either hold the tongue out with the fingers or put a safety pin or suture through the tip of the tongue and fasten it to the patient's cheek with adhesive.

The Schafer Method

The patient is placed on his abdomen, one arm extended directly ahead, the other arm bent at the elbow, with the face turned outward and resting on hand or forearm so that the nose and mouth are free for breathing. (See illustration).

Kneel, straddling the patient's thigh, with your knees placed at such a distance from the hips as will allow you to Assume the position shown below.

Place the palms of the hands on the small of the back, with the fingers resting on the lower ribs as shown in the figure top right.

With the arms held straight, swing forward slowly so that the weight of your body is gradually brought to bear upon the patient. Your shoulder should be di-

rectly over you hands at the end of this forward swing. Don't bend your elbows. Take about 2 seconds. Figure at bottom right.

Swing backward at once, removing all pressure completely.

After 2 seconds, swing forward again. Repeat 12 to 15 times per minute, a complete respiration every 4 seconds.



Discussion

By ROSS T. MCINTIRE*

Vice Admiral (M.C.), Surgeon General
U. S. Navy, Washington, D.C.

The policy of this Bureau with respect to manual versus mechanical methods of artificial respiration is in accord with the recommendations of a Committee assembled by the Division of Medical Sciences of the National Research Council in 1943. This is outlined as follows:

Manual methods are the measure of choice wherever feasible. In the event of special circumstances where manual procedures are not practicable, the use of mechanical appliances is indicated. The use of mechanical resuscitators involving negative pressure, that is apparatus of the suck and blow type, is not advised. In other words, resuscitators operating on positive pressure alone to the exclusion of apparatus, operating on both negative and positive pressure, are advocated.

You inquire as to the most efficient methods of artificial respiration to be performed by untrained persons. It is not believed that any procedure, whether manual or mechanical, can be effectively applied without at least a certain minimum of training. Immediate and adequate application is imperative for resuscitation.

The most efficient method for one trained person at the scene of the accident who has little or no equipment is the Schafer prone pressure manual method. Of the various manual procedures this is the measure of choice by the Navy.

* These discussions were presented through courtesy of the Health Unit, Trinidad, Colorado

You also inquire as to the method and equipment necessary in office or hospital which can be learned readily by the average physician and intern. The Schafer manual method is also recommended under these circumstances, if feasible. If mechanical resuscitation is required, as under certain surgical operative conditions, we advise a positive pressure type of machine. It is suggested that you write to the Secretary of the Council on Physical Therapy of the American Medical Association for information as to where such equipment may be obtained.

The Eve method of giving artificial respiration has been adopted by the British Navy as an alternative to the Schafer prone pressure technique. This method consists of rocking the patient, securely lashed to a stretcher over a fulcrum, making use of the abdominal organs alternately to push and pull the diaphragm up and down in the manner of a piston. An ordinary stretcher can be adapted to this purpose by fixing under its center a pair of grooved wooden blocks to prevent slipping.

Discussion

By JOHN S. LUNDY, M. D.

Section on Anesthesiology
Mayo Clinic, Rochester, Minn.

The most efficient method of artificial respiration to be performed by untrained persons is that of the Schafer prone pressure method.

The most effective method I believe, is to tip the patient to a slight Trendelenburg position if possible and have a gas machine or some equipment where a cylinder of oxygen, gas bag and mask

(Continued on page 202)

Mouth to Mouth Breathing



A simple method is to blow into the patient's mouth (preferably through gauze if it is handy). It is difficult to overinflate by this method and it is most readily available. (See discussion by Army anesthetist). Also, it furnishes carbon dioxide as a respiratory stimulant.

With one hand the operator holds the patient's nose closed, while he blows at slow, regular intervals into the patient's mouth. If the chest does not expand while the operator is blowing into the mouth, there is an obstruction in mouth, throat or larynx—look for foreign bodies or fluids, turn the patient on his stomach.

Anesthesia in Office Practice

(This Pictorial Section was adapted from ideas in the excellent article by N. E. Lenahan, M.D., Columbus, Ohio, in *Ohio Medical Journal*, July 1944. The original illustrations were made by T. Lozier, staff artist of *Clinical Medicine*.—Editor.)

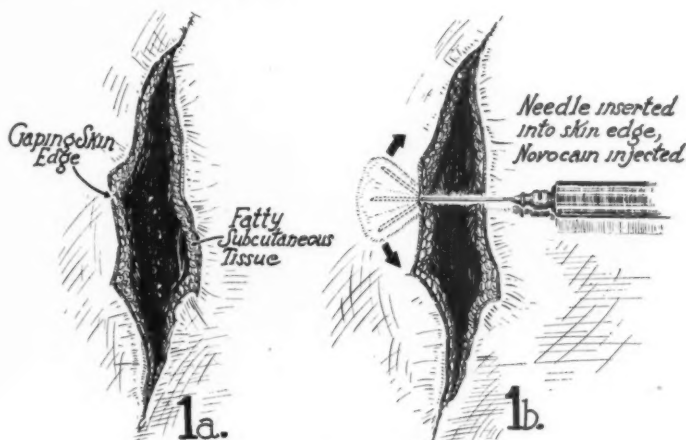
Fig. 1. (a) A lacerated wound which has been cleansed with soap and water

(b) Procaine (novocain) solution is injected into the cut edge of the skin, thus avoiding the pain of inserting the needle through the intact skin.

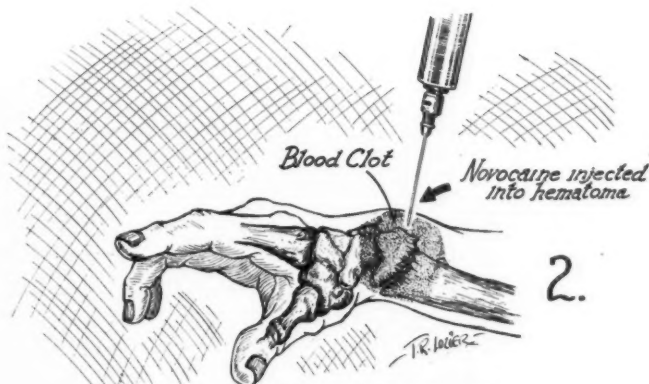
Fig. 2. Local anesthesia for reduction of a Colles fracture (fracture of the radius close to the wrist joint); Novocain is injected into the skin, then the needle is inserted through the anesthetized skin into the hematoma which forms at the fracture line. Several drops of blood may be aspirated from the hematoma, to prove that the needle is in proper place (the blood usually contains fat globules and is dark in color)

The 2 percent novocain or metycaine solution is then injected slowly, in amounts of 10 to 50 cc., depending on size of bone fractured.

Anesthesia appears within a few minutes and lasts for 1½ to 2 hours.



LACERATIONS



COLLES FRACTURE

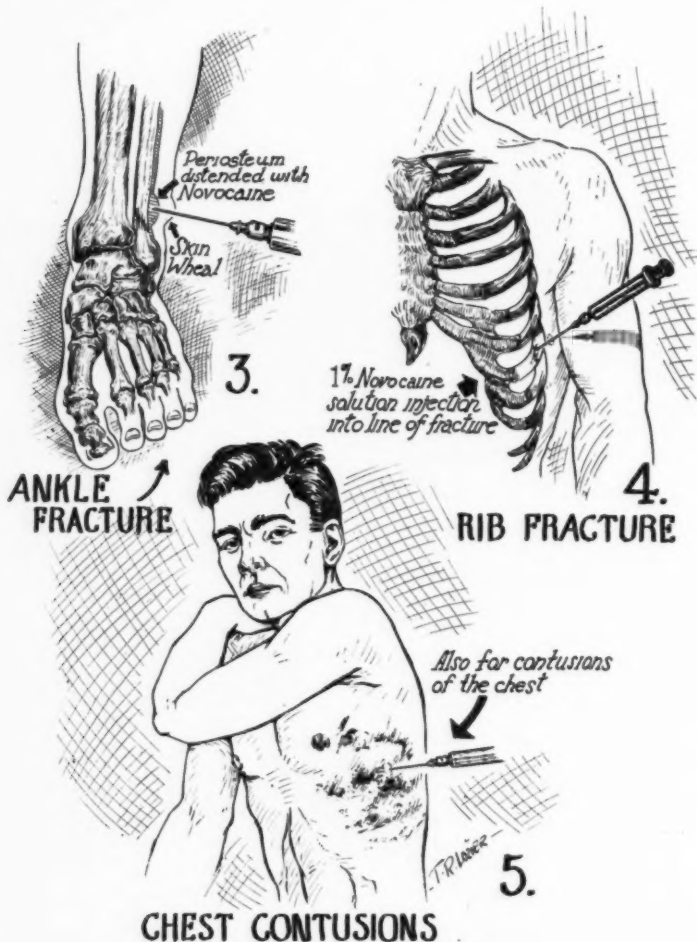
Anesthesia in Office Practice

Fig. 3. If no hematoma is present or if the fracture is several days old, one injects the anesthetic solution down to the periosteum around the fracture line, using from 20 to 100 cc. of one-half percent procaine-adrenalin solution. At least ten minutes will be required for effective anesthesia.

A fractured fibula is injected in this manner.

Fig. 4. The pain of a fractured rib can be relieved by injecting procaine solution directly into the fracture line (and into surrounding tissues also, if markedly tender). Pain is relieved at once and it is never so severe thereafter. In severe cases, the injection may need to be repeated two or three times when the pain begins to recur.

Fig. 5. Contusions of the chest, without fracture, often result in severe pain, limitation of movement of the chest and shallow breathing. Injection of procaine into the most tender areas will relieve all the symptoms.



Anesthesia in Office Practice

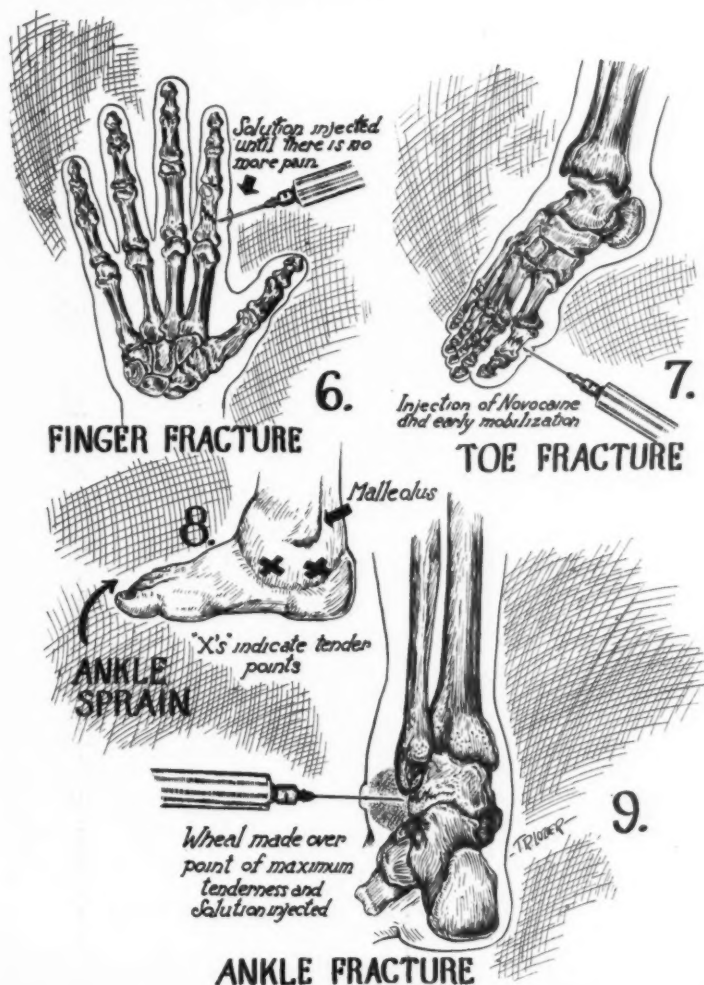
Fig. 6. Procaine injections into non-weight bearing fractures relieve discomfort and edema, thus permitting early activity and better blood supply for fracture healing.

Procaine is injected until there is no more pain or tenderness, the part massaged and wrapped with an elastic bandage, following which normal activity can be carried on.

Fig. 7. Fractures of taral and metatarsal bones are treated by injection and adhesive strapping.

Fig. 8. Sprained ankle: Careful palpation reveals one or two very tender points over the internal lateral ligaments (see "x's" in sketch). The injection of novocain solution into these ligaments relieves all pain, an elastic bandage is applied and the patient encouraged to walk at once.

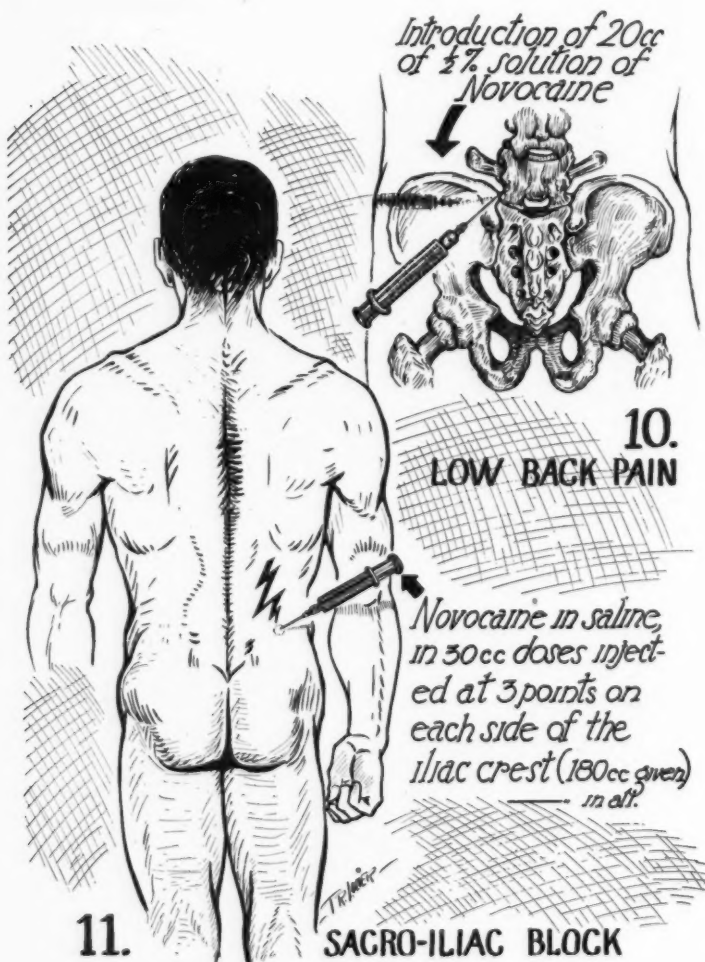
Fig. 9. Fractured ankle: If X-ray examination reveals a fracture, procaine solution is injected and proper support (plaster cast) applied.



Anesthesia in Office Practice

Fig. 10. Back pain: If pain and tenderness are present over one or both sacro-iliac joints, one should inject 20 cc. of $\frac{1}{2}$ percent solution at three points in each sacro-iliac joint.

Fig. 11. Back pain: If pain and tenderness are confined to the iliac crest muscle attachments, one injects 30 cc. into each of three points on each side of the crest, making a total of 180 cc. if both sides are injected. The patient is told to carry out all movements which were previously painful, after the solution has been vigorously massaged into the tissues. After either of these injections the back may be taped.



PICTORAL SECTION

Fig. 12. Painful shoulder: A "trigger point," a very tender area (or several of them) may be found on the top of the shoulder, around the shoulder girdle or in the back muscles, the injection of which with 5 to 10 cc. of procaine solution relieves all shoulder pain.

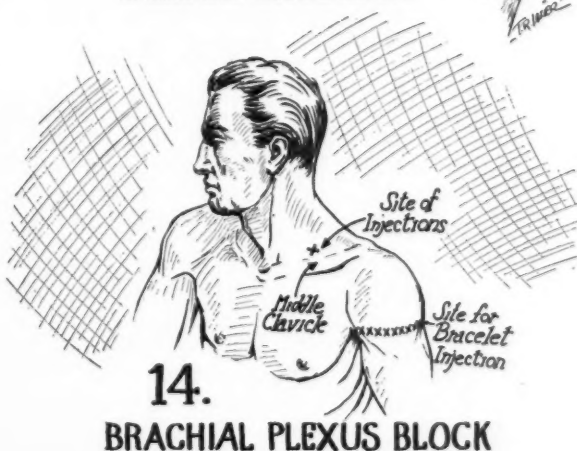
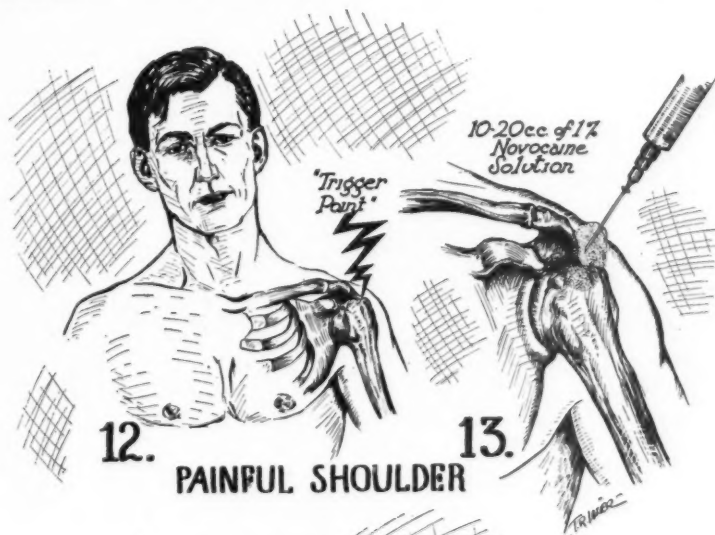
Fig. 13. Injecting a painful shoulder, the needle being carried down, practically to the bone.

Fig. 14. Brachial plexus block may be used for (1) surgical procedures on the hand, forearm or upper arm, (2) fractures in the same regions, (3) "frozen shoulders" to permit mobilization and to encourage use. The patient lies on his back with his head turned to the opposite side, a wheal of procaine solution is raised $\frac{3}{4}$ inch above the middle of the clavicle and immediately lateral to the subclavian artery and a needle is inserted downward and inward (medially) until the first rib is touched.

One may inject 20 cc. of 2 percent solution through this needle, or may insert an additional needle $\frac{1}{2}$ of an inch from the clavicle and parallel with the first needle and a third needle parallel to the first needle and $\frac{1}{2}$ inch posterior to it. Five cc. are injected through each needle.

For practical purposes, if the first rib is not encountered, do not poke around in the tissues at random, but rather inject 5 cc. and withdraw the needle into the subcutaneous tissues before inserting again.

The superficial injection around the upper arm ("bracelet injection") blocks off intercostal nerves.



PICTORAL SECTION

Fig. 15. For tibial block, the patient lies prone on the table, a needle is inserted into the flexion crease behind the knee a little to the outside (lateral) to the midline (the tibial nerve is under this point).

Five cc. are injected just under the skin to block sensation from the medial cutaneous branch. Deeper under the deep fascia, 15 cc. of 2 percent solution is injected.

The injection of 10 cc. on the posterior-lateral aspect of the fibula, just inferior to the head, is then carried out.

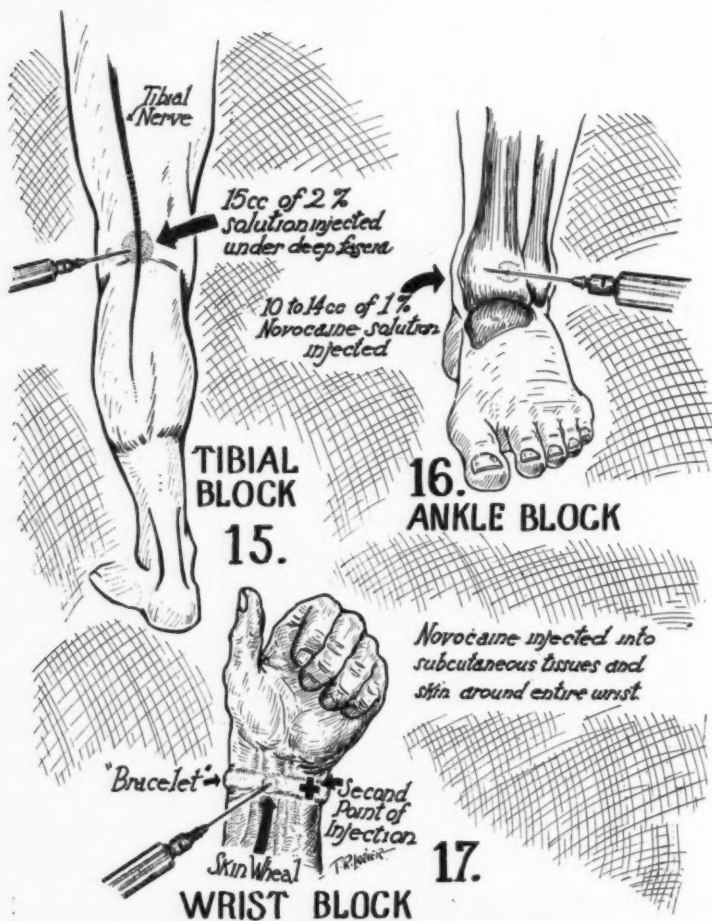
Fig. 16. Ankle block: An imaginary line is drawn between the most important points of the internal and external malleoli. A skin wheal is raised at the middle of this line, a needle is inserted and pointed toward the anterior border of the internal malleolus.

Just before the needle strikes the tibia, 15 cc. of solution are injected. The posterior tibial nerve is injected and then a "bracelet" injection of the skin and subcutaneous tissues carried out.

Fig. 17. Wrist block: Three steps are necessary after injecting a "bracelet" around the wrist, (1) injecting between the two tendons—see position of needle in illustration and (2) injecting point marked "x" down to bone. (3) injecting the radial nerve, in the same way, over the radial styloid.

The wrist is held in extension, thus making the two flexor tendons prominent, the needle inserted between them and 5 cc. injected.

The ulnar nerve lies just outside the medial flexor tendon at point "x" and is injected with 5 cc. of solution.



Editorial

The Re-Education of the American People

By L. J. BOTLEMAN, Superintendent of Schools, Trinidad, Colorado

Education Can Be Used to Make War.

Some of the principles to which a youth of eighteen years in Germany must subscribe when advanced to leadership in the Nazi party are as follows:

1. The Leader is always right.
2. Never violate discipline.
5. The program is our dogma; it demands our complete submission to the Cause.
7. Loyalty and unselfishness are the first commandments.
12. Whatever serves the interest of the Movement and through it Germany and the German people is right.

Doctor Ley is quoted as follows regarding Nazi youth leadership: "They must become fanatical preachers of the gospel. . . . We demand of them unconditional obedience. The members of our order must be willing to obey even when it is unjust for them to do so. This is the greatest test."

"Upon admission to the order, the man belongs to the party—body and soul. The party gives him everything, and in return he gives all that he has to the party.

The late Ambassador Dodd is quoted on Nazi education as follows: "The Nazi idea is to make the rising generation worship the chief and get ready to 'save civilization' from the Jews, from Communism, and from Democracy—thus preparing the way for a Nazified world where all freedom of the individual, of education, and of the churches is to be totally suppressed." One of the most terrible crimes committed by Hitler and his associates has been to take from youth a sense of responsibility for its individual actions. I quote from Rauschnig, " 'My teaching is hard,' says Hitler. . . 'Youth will grow up before which the world

will shrink back. A vitally active, dominating, intrepid, brutal youth—that is what I am after. Youth must be all these things. It must be indifferent to pain. There must be no weakness or tenderness in it. I want to see once more in its eyes the gleam of pride and independence of the beasts of prey.' "

Education Has a Role to Play in Bringing Peace.

Education for Peace Demands in Addition to the Re-Education of the Germans and Japanese, Re-Education for the American People.

A better understanding of human nature and the possibility of nations behaving in a criminal manner.

1. A better understanding of human nature incorporates self discipline of the individual. Individuals demand:
 - a. Social justice which includes a desire for home, food, clothing, schools, church, and security in old age and illness.
 - b. The dignity of the individual in a democracy has to be maintained. If the dignity of the individual is lost in a movement or course, a totalitarian state can easily be established in this pagan philosophy.
2. The question relating to future wars.
3. The tempting prize which the United States presents to future aggressors.
4. The impossibility of pursuing an isolationist policy which is all out of keeping with the American tradition of aggressive self protection.
5. The Anglo-Saxon tradition of government of law and not of man, which if applied to the international situation, may serve to settle state disputes by peaceful means, and at the same time, hold in bounds the international authority.

* Outline of talk presented by Superintendent L. J. Botleman before the Centennial School P.T.A., November 21, 1944 Parent-Teachers Association

GRADUATE COURSE

Artificial Respiration*(Continued from page 194)*

are available so that intermittent pressure can be made on the rubber bag after it has been inflated with oxygen. This seems to be the best method. There is, however, a new device. It has been approved by the Surgeon General's office of the Army and is a hand bellows which uses air and can be operated by practically anyone after one glance at the pictures shown in the cover of the case. It is called the Kreiselman Resuscitator Model No. 110, manufactured by the Ohio Chemical and Manufacturing Company, 745 Henna Building, Cleveland, Ohio.

Discussion

By RALPH M. WATERS, M.D.,

*Department of Anesthesia,
University of Wisconsin Medical School,
Madison, Wisconsin*

The best method is the method that is applied at once. Reprints from two articles which have a bearing on this question are: *The Journal of Laboratory and Clinical Medicine*, October, 1940: "It is obvious that there are many maneuvers capable of maintaining satisfactory exchange of alveolar atmosphere when normal respiration ceases. Two factors more important than the method by which exchange is brought about are (a) the promptness with which the artificial method is initiated after normal activity has ceased and (b) the intelligence and

physiologic understanding with which the method is applied. Because of a realization of the necessity for promptness, lay rescue squads were instituted and trained to function in the absence of a physician until one could reach the patient. They have served a useful purpose but as a result, the medical profession and the public have come to look upon 'resuscitation' as a nonmedical effort.

"Medical schools neglect to teach the clinical application of physiologic principles to the care of acute respiratory morbidity. Many young physicians come to their internships dependent solely upon such knowledge and skill as they have gained from their Boy Scout training. Practitioners of medicine rush to the telephone to call rescue squads from the police and fire departments while patients die who could be rescued. To the disgrace of present day medical education, sudden failure of respiration is not a rare cause of death in the wards and operating rooms of the modern hospitals. . .

"Resuscitation is not the resurrection of the dead but the re-establishment of oxygen transport from the atmosphere to body tissues when either factor in that transport has been suddenly interrupted.

"The restoration of circulation, once it ceases, is rarely possible. The treatment directed toward the heart and blood vessels, other than the injection of blood and other fluids, is rarely indicated

"Mechanical devices will be rarely needed if instant intelligent aid is at hand. They do not produce more ade-

Specialized Methods

If an anesthetic machine is at hand, rhythmic compression of the breathing bag containing oxygen or carbon-dioxide-oxygen will artificially inflate the lungs. A face mask, rubber breathing bag (5 liter) and small portable oxygen tank (see illustrations) should be at hand in every doctor's office and car, and in every hospital emergency room. (It can also be used on new born babies and cyanotic patients with pneumonia, heart failure, etc.) It would be much safer for industrial and fire rescue squads to have than the "pulmotor" and other resuscitators which are physiologically wrong in principle.

After the bag is filled with oxygen, the bag is squeezed so that the lungs will be filled. When expansion of the chest is seen, the operator lets go of the bag and permits expiration.

Recommended position to permit fluids to escape from the lungs and stomach,

while inflating the lungs with oxygen is shown in lower right illustration.



quate exchange than direct inflation from the operator's own lungs or manual maneuvers, nor higher concentrations of oxygen than a simple oxygen cylinder breathing bag and mask, and they may traumatize or over-ventilate the lungs. Their sole advantage is seen in cases of drug poisoning, paralyzes and the like which require long periods of artificial respiration and cause the operator to become exhausted. Rarely, however, will such cases come under the classification of 'resuscitation'."

Discussion

By RALPH T. KNIGHT, M.D.

Director of Anesthesia, University of Minnesota Medical School, Minneapolis, Minnesota

1. I do not believe that I can be considered an expert on first aid methods of artificial respiration, as I haven't been called upon under such circumstances for a good many years. My impression is that the Schafer prone method is the most satisfactory.

2. The best method in the hospital is to use the anesthesia machine equipped with a carbon dioxide absorber and re-breathing bag, which is kept filled with oxygen. The mask must be applied tightly so that there is little or no escape. The bag is compressed rhythmically at the usual rate of respiration, about 20 per minute. The pressure should be gentle, but sufficient to expand the chest to a normal degree. When the chest is expanded the bag is released. Every hospital is surely equipped with an anesthesia machine, and I believe that this is as good as any so-called resuscitator. I believe that each hospital should also be equipped with a simple attachment for a small oxygen cylinder which can easily be carried from room to room and floor to floor for emergencies. The attachment should consist of a well-fitting mask, a re-breathing bag, tubing, and yoke attachment for the oxygen cylinder. This can be used as described above for the anesthesia machine.

The most important point of all is to make sure that there is no obstruction in the mouth, nose or pharynx to the passage of oxygen or air in and out of the lungs. Artificial respiration is of no account unless this condition is fully met. There should be a Guedel rubber airway always with such equipment to be inserted through the mouth into the pharynx. There should be also a rubber tube with one end cut obliquely and the edges smoothed, one centimeter or 12 millimeters in diameter and of such a length as is measured from the nostril

to the tragus of the ear. If a freely opened airway is not otherwise attainable this should be gently inserted through one side of the nose so that the oblique end reaches into the pharynx near the larynx. Of course the ideal airway under such circumstances is effected by inserting such a tube, but longer, through the mouth or nose into the trachea.

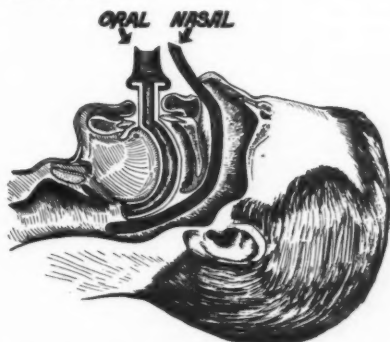


Illustration showing oral and nasal breathing tubes to assure free air passage to the lungs.

Discussion

By WILLIAM B. DRAPER, M.D.,

Department of Physiology and Pharmacology, University of Colorado, School of Medicine and Hospitals, Denver, Colorado

It is our experience that the Schafer prone-pressure maneuver is the most efficient method of artificial respiration both for untrained persons and trained persons without equipment. Much less muscular effort is required to carry out the Schafer method than the Sylvester. This point is very important particularly when the patient is heavier and more muscular than the administrator. With the patient in the prone position, the tongue tends to fall away from the posterior wall of the pharynx. This provides a better airway than is usually present when the Sylvester method is used. Patency of the airway is of the greatest importance during artificial respiration. Also an assistant can more readily pull the tongue forward or administer oxygen and carbon dioxide during the Schafer maneuver. The Eve rocker method requires very little apparatus and deserves consideration.

With regard to your third question concerning a method and equipment for an office or hospital which can be learned readily by the average physician or intern, I suggest that it is absolutely essen-

tial that there should be some apparatus for administering oxygen. Carbon dioxide 5% or 7% is a valuable adjunct. The ordinary anesthetic gas machine is efficient for this purpose. It is not, as far as my knowledge goes, of very great importance whether the apparatus be of the "inhalator" type or of the "pulmotor" type. The main objective of artificial respiration is to get oxygen into the alveoli of the lungs. Again it is necessary to emphasize the importance of the airway. Without a patent airway, there can be no respiration.

Considerable experience in the use of analeptics (stimulants) has led us to the conclusion that they should occupy a place of secondary importance. The patient in respiratory arrest can be saved only by the replenishment of his alveolar oxygen. This is accomplished most certainly and effectively through artificial respiration. Analeptic drugs are useful chiefly insofar as they improve the circulation.

Discussion

By F. C. JACOBSON, M.D.,

St. Luke's Hospital, Chicago, Ill.

1. What is the most efficient method of artificial respiration to be performed by an untrained person? The answer must be Schafer's method of artificial respiration in the prone position, with the free air way. I would answer the second question, 2. The most efficient method for one trained person at the scene of the accident who has little or no equipment by saying that any trained person should be familiar with the use of the bag, mask and an oxygen supply giving a flow of at least 15 liters of oxygen per minute by which intermittent inflations of the lungs are carried out. Again the free air treatment is important. In answer to the third, 3. The method and equipment necessary in office or hospital which can be learned readily by the average physician or interne, I will answer by stating that a bag and mask, an oxygen tank with a regulator which will provide at least 15 to 20 liters per minute and enable one to inflate the lungs intermittently is all that is necessary. Again the free air way is of extreme importance and a flow of oxygen the equivalent of the minute volume should be used in every case in order that excess carbon dioxide will not accumulate within the bag. If a flow of 15 to 20 liters is provided, there will be no accumulation of carbon dioxide possible in the inspired atmosphere.

I do not believe that mechanical respirators or resuscitators are as good as

resuscitation by means of the latter. Mechanical resuscitators are no better than the person who operates them and there must be some one in attendance at all times with the use of mechanical resuscitators as well as with the most simple type as outlined above. Educational programs for the personnel are more important than fancy equipment.

Discussion

By AN ARMY ANESTHETIST
in a large hospital

In all forms of artificial respiration, the principle point neglected is the establishment of an open air passage. This can be achieved by having the patient lying on his face or by holding the tongue forward in the mouth with the fingers or by a breathing tube of some sort. As for your specific questions: (1) The most efficient method of artificial respiration for the untrained person is mouth-to-mouth breathing. It is difficult to overinflate by this method and it is the most readily available. The next most efficient method is that of Eve in which the patient lies prone or supine on a wide board or litter which is pivoted at its center. Artificial respiration is achieved by seesaw movement of the patient eight to ten times per minute. The abdominal contents and diaphragm act as a piston to fill and empty the chest cavity. The least efficient method is that of Schafer. (2) The most efficient methods for a trained person without equipment are the same as given above. (3) The above methods are equally satisfactory for office or hospital use, but it is best to use oxygen when this is available. The simplest method of administering artificial respiration with oxygen is by means of a face mask and rubber breathing bag connected to the source of oxygen. Intermittent compression of the breathing bag eight to ten times per minute, allowing some escape of gas, will both provide oxygen and eliminate carbon dioxide. Even in institutions more elaborate apparatus may be a financial burden and is likely to result in delays in using simpler methods while someone is dispatched for the apparatus. Promptness is vital in all forms of resuscitation.

Discussion

By HOWARD A. CARTER, M.D.,
*Secretary, Council on Physical Medicine,
American Medical Association,
Chicago, Ill.*

It is the opinion of the Council that the Schafer prone pressure method is the most desirable one for lay people to

learn to use. It requires no apparatus and can be administered immediately.

I know of no method of artificial respiration that can be performed by untrained persons. Some sort of training must be given in order to administer the Schafer prone pressure method. There are a variety of methods that might be used by trained individuals whether they are professional or laymen.

In an emergency case it is highly doubtful that any equipment is handy so your question is rather difficult to answer. Doctor Eve of England suggested the rocking method which surely requires a minimum of apparatus. A plank or a ladder on a fulcrum can be used.

Discussion

By MEDICAL GENERAL DIRECTOR
OF THE NAVY, London, England

No method of artificial respiration can be performed by the completely uninitiated, but assuming that it is by relatively untrained persons, first-aiders, then Eve's rocking method is considered the most efficient.

While it is not intended to quote statistics, it may be said that the results of attempts at artificial respiration in 1944, when Eve's method was being used, are more satisfactory than the results in 1942 when Schafer's method was being employed almost exclusively. It is therefore known on sound practical data as well as on theoretical reasoning and research, that rocking is the most efficient method at present being used in the Royal Navy. It is easily performed by relatively untrained persons, provided there are several helpers and the gear (either in readiness or improvised) which is required is at hand—as it always is in H. M. ships.

Failing the necessary equipment or space to perform rocking on a stretcher, it is considered that manual rocking, though yet untried on a wide scale, is probably the next most efficient method.

The most efficient method for a single trained but unequipped person at the scene of an incident depends on the degree of asphyxia. Schafer's method is considered to be the one which should usually be tried first in "mild" cases of asphyxia, as it is, for such cases, adequate and perhaps the most efficient.

On the other hand it is thought that Schafer's method is often quite useless in "severe" cases of asphyxia in whom the tone of the diaphragm is lost, and in whom therefore inspiration does not take place as Schafer taught. Accordingly, for "severe" cases, and for mild cases in whom there is no immediate response to Schafer as witnessed by audible air exchange and yielding loins, Silvester's method is considered the most efficient for a trained but single-handed operator.

It is thought that the efficient rocking method should be used in hospitals as necessary, for cases requiring urgent resuscitation. For this, it would be desirable to having "rocking stretchers" permanently rigged for emergency, and the usual operating table may be rocked with but little modification in its structure.

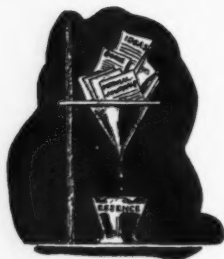
Discussion

By BURNET M. DAVIS, M.D.,

Surgeon (R) U. S. Public Health Service,
Division of Public Health Methods,
Office of Surgeon General, U. S. Public
Health Service, Washington, D. C.

The U. S. Public Health Service has not undertaken research designed to give a definitive evaluation of the relative value of the various methods of artificial respiration. Officers of the Public Health Service have consulted with the U. S. Bureau of Mines, the Office of Civilian Defense, and the American Red Cross in preparation of their respective publications on first aid, and these manuals, may be consulted, particularly with respect to your first two questions. The prone pressure method appears to be recommended by these three agencies as the method of choice in all but the exceptional case.

On the third question there is, as you know, no unanimity of opinion among physicians or others who have studied the problem. It is obvious, of course, that the method of choice even in fully equipped hospitals will depend on the circumstances and the reason why breathing has stopped. For example, a method suitable for use during apnea under anesthesia would not be practicable for a patient with respiratory failure due to poliomyelitis.



CLINICAL NOTES and ABSTRACTS

Deliveries Under Low Spinal Anesthesia

Low spinal anesthesia of 50 mg. of novocain crystals in the fourth lumbar interspace has been used with gratifying results in 200 of a series of 310 consecutive deliveries during the last two years. There were no maternal deaths nor were there any "close calls." A few patients complained of a minor headache which was relieved easily with aspirin. The fetal mortality was less than 2 per cent and had no relation to the type of anesthesia used.

The most opportune time to give the anesthetic was found to be after effacement had taken place. In primiparas, it is preferable to wait until the cervix is from 6 to 8 cm. dilated. In multiparas, it can be given somewhat earlier. To those doctors who object to being with their patients at this slightly early stage, it might be added that spinal anesthesia can be given in place of a general in the very final stage of labor. The duration of the spinal anesthesia was found to be at least one hour in the perineal region and in some cases as long as one and one-half hours. In the large majority of these cases, the patient retained the voluntary control of the muscles of the legs but no sensation below the level of the iliac crests.

Technic

The patient is placed on her side and the knees flexed moderately on the abdomen, care being taken not to exert undue pressure on the baby. The head is flexed on the chest. The fourth lumbar interspace is located and a wheal is raised with 1 per cent novocain. Following this a 22 gauge spinal needle is introduced into the subarachnoid space and 1 cc. of spinal fluid is withdrawn. This

is used to dissolve 50 mg. of novocain crystals. This solution is then injected into the subarachnoid space without barbotage.

The entire procedure can be carried out within a matter of three or four minutes. The small gauge needle facilitates entry into the spinal canal with the patient in the semiflexed position obtainable under the conditions at hand with the protuberant abdomen. Anesthesia is almost instantaneous, the patient having usually one and occasionally two more pains after the injection. She is turned immediately on her back and placed in the lithotomy position with the spine in a horizontal plane, the head and lower spine on the same level. By the time this change in position has been accomplished, even the most apprehensive patient has begun to relax and becomes quite content. From this stage on, she is encouraged to breathe deeply at frequent intervals in an effort to supply the baby with the maximum of oxygen as well as to stimulate the maternal circulation of blood.

The perineum is cleansed with green soap and an antiseptic solution is applied. Due to the fact that contractions of the uterus continue unabated, and the vaginal tract is completely relaxed, the presenting part usually descends rapidly and crowning is observed in most cases less than 30 minutes after the spinal anesthesia is administered. Delivery was accomplished in most cases by means of an episiotomy and outlet forceps. In several instances, spontaneous delivery was permitted primarily to demonstrate that the uterine contractions were capable of accomplishing delivery without the necessity of voluntary contraction of the ab-

dominal muscles. Obstetric maneuvers, such as rotation or version and extraction, are carried out much more easily with spinal anesthesia because of the complete relaxation of the perineal muscles.

Labors were relatively short, being an average of 6.2 hours in the cases delivered under spinal anesthesia. Very little analgesia was used to suppress pain in the majority of these cases prior to the spinal injection. This, and the fact that the patient received no inhalation anesthesia, is probably responsible for lack of asphyxia of the newborn encountered in this series. The great majority of infants breathed prior to the delivery of the shoulders. Kotz and Kaufmann have shown that sedatives and general anesthesia are responsible for asphyxia of the newborn in relation to the amount given and the length of time over which administration takes place.

Spinal anesthesia was not employed in any case in which the systolic pressure during labor was less than 110 mm. In borderline cases, 5 minims of neosynephrin hydrochloride were given subcutaneously. In these instances, the pressure dropped very little and not infrequently a rise was noted.

Mothers who have had this type of delivery are its most enthusiastic exponents. The ones who are most appreciative are those who have had the unpleasant experience of a general anesthetic or an unsuccessful perineal block with a previous delivery. Former nurses were among the most pleased patients.

Advantages of low 50 mg. spinal anesthesia for delivery are thought to be numerous.

1. Technical difficulties associated with administration are reduced to a minimum.
2. Due to the relaxation of the lower uterine segment and vaginal canal the length of labor is definitely shortened.
3. There is no interference with the vital mechanisms of the child as seen with general anesthesia.
4. Delivery of the placenta and involution of the uterus are not retarded.
5. Obstetric maneuvers, such as rotation of occiput posterior presentations, are carried out with greater ease and less danger to the child. Breech deliveries are made infinitely less tedious.
6. Blood loss is no greater than with general anesthesia. In most cases, there is probably less blood loss.
7. Postpartum complications are reduced to a minimum. In this series of

200 spinal deliveries, it was found necessary to catheterize only one patient, while several of the patients who had been given general anesthetics had to be catheterized. There were no postpartum infections in either group.—B. H. KLEIN, M.D., in *Jour. Mo. State Med. As.*, Oct., 1943.

Typhoid Vaccine Nonspecific Therapy

Typhoid vaccine has been used a great deal for its non-specific effect, including its use in certain types of joint disease, such as *rheumatoid arthritis*.

Procedure

Start with twenty-five million bacteria intravenously and use the stock typhoid vaccine. Double the dose with each injection, so the second injection is fifty million, and the third is one hundred million bacteria intravenously. Succeeding doses are given after the temperature has been normal twenty-four hours.

After the first dose the patient will have a febrile reaction, which is variable but not greatly so, for forty-eight hours, and at the end of forty-eight hours the temperature is practically always normal, so seventy-two hours is allowed between the first and the second dose.

When the second dose is given, there will be a different type of reaction. It will be explosive, but for a shorter period, and the temperature will return to normal practically always within twenty-four hours. So the time between the second dose and the third dose is usually forty-eight hours, and it is the same after succeeding doses.

Results

Excellent results in the use of typhoid vaccine intravenously have been obtained through use of this technic. Caution should be exercised in the type of case in which it is used. It is practically never used in a person who is over 60 years of age, nor many times in a person over 55 years of age. It is for younger, stronger people, because it is a fairly strenuous type of treatment.

Eye Infections

This technic was used in eye work originally. Some of the most brilliant results seen in vaccine therapy have been in various types of eye infections, often classified as tuberculous by ophthalmologists. It is felt that they must be rheumatic and not tuberculous because of the very excellent results obtained by typhoid vaccine therapy.—R. L. HADEN, M.D. in *Penn. M. J.* 46:558, 1943.

Value of Tonsil Suction

Suction to the tonsil: A glass tonsil suction cup to which suction can be applied either through the use of a hand bulb or from a water or electric suction apparatus has been available for a long time. The cup fits over the tonsil and sucks it up when negative pressure is applied, emptying the crypts and laying them open for topical medication. As a rule after the crypts have been opened up, silver nitrate solution (5 to 25 per cent) is applied.

McAuliffe and Leask (Arch. Otolaryng. 34: 758 Oct., 1941) have devised and developed an instrument designed to apply direct mass suction to the tonsil, and at the same time, to irrigate the tonsillar crypts. The authors have found wet suction at 15 pounds' (6.8 Kg.) pressure to be an effective means of ridding the tonsillar crypts of accumulated organisms, cells and debris, congestion and inflammation being thereby relieved; by making cultures of the sediment from the centrifuged irrigation fluids, the bacterial flora of an infected tonsil can be

determined accurately before tonsillectomy, and cytologic examination of these sediments is helpful in differentiating between hypertrophy of the tonsil due to infection and that due to normal endocrine function.—E.E.N.T., Oct., 1943.

Manual Removal of Placenta

Manual removal of the placenta, when carried out under aseptic conditions, does not carry the risk of infection usually ascribed to it. Failure to remove the placenta in the presence of severe or continuous bleeding or both, creates a greater risk from hematogenic shock. After removal, the placental bed is carefully palpated for remaining secundines before the hand is withdrawn. A hot, intrauterine douche is then employed to promote uterine contraction and to cleanse the uterine cavity of bacteria and blood clot. Transfusion of blood or plasma should be employed and oxytocic drugs given if bleeding does not check promptly.—L. D. ODELL, M.D., in S.G.O., Nov., 1943.

Resuscitators are Harmful

Clinical and experimental research show that the mechanical devices supposed to "resuscitate" asphyxiated infants and adults are harmful. They are based on the principle of inflating the lung by pressure, then sucking the air and other gases out of the lung, much as one would inflate and deflate a rubber bag. Mechanically, such devices are superb. Physiologically, they act contrary to the normal act of respiration.¹

The lung is neither constructed like a rubber bag nor does it change size by pressure and suction. On the contrary,

air is expelled by force supplied by the chest muscles and diaphragm. Air is drawn into the lungs by expansion of the chest, which might roughly be called "suction," just the reverse of the action of the resuscitators.

"The investigations of Henderson and Haggard have determined the time required for the elimination of carbon monoxide from the blood under 4 conditions—

Respiration is normally stimulated by carbon dioxide. If it and oxygen are not available, manual artificial respiration as taught by the Red Cross should be used."

¹ Yandell Henderson and Howard Haggard: "Noxious Gases." New York: Reinhold Publishing Corp. 1943.

| Treatment | Time Required to Eliminate CO. |
|---------------------------------------|--------------------------------|
| 1. Breathing fresh air | 2 and 3 hours and more |
| 2. Breathing oxygen | 1½ hours |
| 3. Breathing air and carbon dioxide | 1½ hours |
| 4. Inhaling oxygen and carbon dioxide | 20 to 30 minutes |
| 5. Resuscitator or pulmotor | 1½ hours |

Infant's Formulae

Dextri-maltose is a good carbohydrate for routine use in formulae. It is less laxative than some of the others, and so is useful in fat indigestion and in convalescence from diarrhoea. It may be spit up more than some others, but it is doubtful if it causes skin rashes. Numbers one and two are essentially the same; number three is made more laxative by the addition of potassium carbonate. In dextri-maltose B an adequate daily intake of iron and vitamin B is added. Four level tablespoonfuls equal one ounce.

Milk sugar (lactose), the "natural" sugar is more laxative than dextri-maltose and so is useful in constipated babies. It rarely causes spitting up. Beta lactose is more soluble and less "gassy." For older children it is useful to increase the caloric value of fruit juice and milk as it is not sweet. Three level tablespoonfuls equal one ounce.

Karo is heavier than the first two and so fewer tablespoonfuls are used. It is somewhat laxative. Its sweetness is a slight disadvantage. The white and brown forms are equally good and may be used interchangeably. Marriott was enthusiastic about this sugar and used it in large amounts, even up to ten per cent. The writer has never been able to use as much without producing diarrhoea, and so rarely prescribes over three tablespoonfuls in the day's mixture. Two tablespoonfuls equal one ounce.—Com. on Maternal and Child Welfare, in *Jour. Maine M. A.*, Sept., 1943.

Tuberculosis Diagnosis

The age groups above 20 provide the most fertile field for the discovery of active cases of tuberculosis.

The following suggested program involving those persons who have come in contact with a case might be inaugurated, assuming that the contact with the case of tuberculosis is broken at the time of discovery:

1. Infants under 3 years of age are to have a tuberculin test. If the reaction is positive, a chest roentgenogram should be taken. If the reaction is negative, the test should be repeated at six month intervals for a period of two years.

2. Children 3 to 14 years old, if negative to the tuberculin test on the first examination, are listed for re-examination when 12 and 14 years of age and are then until 20 years of age subjected to annual tests of roentgen examinations.

3. Adolescents 15 years of age or over

when first examined, are to be subjected to annual roentgenography until they are 25 years old, regardless of the result of the tuberculin test.

4. Adults who are between the ages of 25 and 35 when first examined are to be subjected to semi-annual roentgen examination for two more years, regardless of the tuberculin test.

5. Any adult over 35 years of age at the time of the first visit is to be discharged if his roentgenogram shows no evidence of pulmonary disease at termination of one year of observation.

6. Routine testing of school children is of little help.

The above described program of contact examination would require the close cooperation of the private physicians with the local public health agency and vice versa.—A. A. FILEK, M.D., in *Wis. M. J.*, Sept., 1943.

Treatment of Epidemic Neonatal Diarrhea with Succinylsulfathiazole

Treatment consists in: (1) succinylsulfathiazole by mouth, (2) opiates by mouth, (3) vitamin K, (4) plasma or whole blood transfusions, (5) parenteral fluids and (6) protein milk formulas.

Succinylsulfathiazole is given in somewhat larger amounts than generally recommended. A standard is set at an initial dose of 2 grains per pound of body weight followed by one-sixth the initial dose every four hours. These are conveniently given with the regular feeding schedule and are apparently taken well by the infant. Gavage feeding is not often necessary.

It is important to administer vitamin K to infants treated with succinylsulfathiazole, since a reduction in the number of coliform organisms inhibits the absorption of the vitamin and hence promotes bleeding tendencies.

SUMMARY: 1. Epidemic neonatal diarrhea is confined chiefly to infants under 1 month of age. The onset may be sudden or insidious. The amount of dehydration, weight loss and toxicity depend on the severity of the disease. Stools are liquid and usually greenish yellow. Vomiting occurs in some cases. Fever is present in proportion to the extent of dehydration.

2. A brief review of the literature on succinylsulfathiazole reveals its proved value as a powerful agent in altering the intestinal flora. Its toxicity is minimal.

3. Of 22 cases of neonatal diarrhea, 11 were treated with succinylsulfathiazole.

zole. In the latter group, there were only two fatalities, both of which are believed to be due to inadequate dosage of the drug.

In the control series, there were four deaths. The average number of days of hospitalization for those who recovered was almost twice that of the treated infants.

The weight gain for eight days of infants treated with succinylsulfathiazole was not matched in seventeen days by the untreated infants.

There was a rapid reduction in the number of stools in twenty-four hours in those infants treated with succinylsulfathiazole in contrast to a very gradual reduction in the untreated ones.—A. H. TWYMAN, M.D., in *Jour. A.M.A.*, Sept. 18, 1943.

Malignant Hypertension

The onset of the malignant phase of hypertension is characterized by severe headache, visual disturbances, vomiting, anorexia, cachexia and exhaustion. These evidences in the presence of a systolic pressure bordering on 140 or higher and a diastolic pressure in the neighborhood of 110 or higher predict a progressively rapid failure of the cardiac or renal functions. Patients with hypertension are all potential cardiac or nephritic cases. Their clinical course is rapidly downhill in the essential or malignant type and almost always terminate fatally in cardiac failure, apoplexy or uraemia.—C. C. SHAW, M.D., in *Med. World* (Lond.), Sept., 1943.

Repeated Lumbar Punctures on Normal Children: Spinal Fluid Changes

There prevails the opinion among many physicians that the irritation caused by a lumbar puncture might give rise to a meningeal reaction characterized by an increase in cells at a subsequent puncture. This has been claimed to be true especially in infants and children. Merrit and Gremont-Smith have performed repeated punctures without finding any such reaction except in cases where air, serum, or lipiodol had been introduced.

(1) Sixteen normal children were subjected to two lumbar punctures 48 hours apart.

(2) There was no increase in cell count at the second puncture.

(3) In the older children, the pressure

was slightly elevated at the second puncture and the values for the chemical constituents lower, which would indicate an increased amount of spinal fluid due to the rapid rate of formation consecutive to the first tap.—F. K. BAUER, M.D., in *New Orleans M. & S. J.*, Sept., 1943.

Surgical Preparation with Soap

The question of antiseptics versus soap and water cleansing troubles some of our readers. A letter addressed to Sumner L. Koch, Professor of Surgery at Northwestern University School of Medicine and long an advocate of such cleansing brought this reply: "Our use of soap and water represents a gradual evolution based on the experience of many surgeons as well as on our own observations on patients."

"We use soap and water in the pre-operative preparation of all our patients whether the field of operation is in the abdomen, the chest, or any other part of the body. We have been so pleased with the results, as far as wound healing by primary union is concerned, that we would not willingly go back to any other method."

The technic of Koch and Michael L. Mason is to don surgical gloves and scrub the field with a bar of white soap, cotton, and lukewarm water for 10 to 15 minutes. Anyone who has witnessed the good results achieved by them in cleaning up a dirty, lacerated tendon wound and in obtaining perfect function after primary suture, needs no further prompting.

Sudden Death from Coronary Occlusion

Atropine and aminophyllin are indicated in any patient with coronary occlusion whether the symptoms are severe or mild. Atrophine sulphate ($\frac{1}{2}$ grain) intravenously or aminophyllin (5 to 7½ grains) in 20 c. c. of water given slowly intravenously is indicated at once, and the effect of the drug maintained by intravenous or mouth medication. While morphine is usually required to control the pain in coronary occlusion, it does not serve to break the reflex vasoconstriction, and either atropine or aminophyllin is necessary. Quinidine, too, does not serve the purpose.—*Minn. Med.*, Oct., 1943.

DIAGNOSTIC POINTERS



Early Signs of Goiter

• Nervousness, palpitation, weight loss, despite good appetite, dyspnea on exertion, slight swelling of the legs, discomfort in hot weather or in a hot room, increased number of stools or diarrheal tendency, exophthalmos and a stare, occurring in a female between the age of 18 and 50 should make one suspicious of thyrotoxicosis.—R. H. WILLIAMS, M.D., (Harvard Medical School), in *Med. Clin. N. Am.*, Sept., 1944.

X-Ray of Intestinal Obstruction

• If gas is visible in the colon, as observed on a roentgenogram taken for intestinal obstruction, a complete obstruction is not present.—Radiologist Jamison (Denver) at Colorado State Medical Association Meeting, Sept. 28, 1944.

Diabetics Die From . . .

• The diabetic is more likely to encounter coronary occlusion, peripheral vascular disease, infections of the extremities and acute pyelonephritis, than is the non-diabetic. These conditions cause many diabetic deaths—watch for them.—S. L. ROBBINS, M.D., in *New Eng. J. Med.*, Dec. 28, 1944.

Significance of Nose Bleed

• In every case of nosebleed, the blood pressure should be determined, the urine examined, and in middle-aged or older persons, unilateral epistaxis requires an investigation for possible malignant tumor in the sinuses.—F. L. WELLS, M.D., in *Med. Clin. N. Am.*, Sept., 1944.

(Rheumatic fever in children is often associated with epistaxis. The most common cause of nosebleed is picking the nose with the finger nail and traumatizing the mucosa of the nasal septum.—Ed.)

Frequency of Urination

• Smoking may be the cause of urinary frequency, especially in women. —*Medical World* (London), Mar. 31, 1944.

Simple Hearing Test

• The patient blocks one ear with his finger and closes his eyes. The physician uses a low whisper and conversation which are normally heard at a distance of 20 feet. Deafness to a watch tick is indicative of high tone deafness ("nerve" deafness) beyond the conversational range. Low tone loss ("middle ear" deafness) is most easily shown with tuning forks.—F. L. WELLS, M.D., in *Med. Clin. N. Am.*, Sept., 1944.

Psychogenic Eye Symptoms

• A large proportion of neurotic patients, whose chief symptoms have taken the form of compulsions or obsessions, other than those referable to their eyes, wear glasses or complain of trouble with their eyes.

They state that they have "weak eyes," that their vision is blurred or limited, that their eyes water excessively.

Glasses may become the emblem of quiet respectability and a denial of sensuality, so that one finds women who defer having an ophthalmologic examination because of the fear that glasses may throw them into the respectable, asexual group. Middle-aged men, regarding glasses as evidence of approaching senescence, with its connotation of impotence, put off visiting the ophthalmologist.

Glasses may fix a neurosis on this particular organ, as the orthopedist's brace may tend to fixate neurotic dissatisfaction on a weak back.—C. P. OBERNDORF, M.D., in *Arch. Ophthal.*, Dec., 1944.

Hypothyroidism

• Symptoms of hypothyroidism are: (1) weakness and fatigue, (2) muscle tiredness at the end of the day with aching and muscle cramps, (3) tiredness, (4) they usually have a good intelligence yet it tires them to use their minds, (5) they become sleepy on reading, (6) they seem nervous largely because of things undone and which they worry about doing, (7) they complain of sleeping too much (a few have insomnia, they state) and (8) many are overweight, some are of normal weight and a few are thin, but the obese patients complain how difficult it is for them to lose weight short of very rigid dieting.—D. H. SMITH, M.D., in *South. Med. & Surg.*, July, 1944.



THUMBNAIL

THERAPEUTICS

Liver Extract for Shock

• A substance in liver, and some commercial liver extracts used for the treatment of pernicious anemia, is effective in combating shock due to burns.—M. PRINZMETAL, M.D. in *J. A. M. A.*, July 10, 1943.

(That liver extract has general body stimulating properties is apparent to anyone who uses it for other conditions than anemia. Eight years ago a Viennese physician, whose reference cannot be located now, found that liver extract was of value in treating coma, regardless of cause. In a patient who is not doing well, or who feels asthenic for no discoverable reason, several injections of liver extract are often of great value.—Ed.)

Hives on Eyelids

• Dab the hives with cotton wool moistened with this solution:

| | |
|---------------------|--------|
| Sod. Thiosulf. | 30.00 |
| Aq. Laurocer | 30.00 |
| Aq. Dest. | 250.00 |

—E. E. N. T. M., Oct. 1943.

Chiggers

• The Manual of Dermatology, published by the National Research Council suggests as a prophylactic, 5% sulfur in talcum as a dusting powder, or 5% sulfur in a vanishing cream base. Apply before possible exposure.

Epidermophytosis

• A stock solution is made up by mixing in the order named

| | |
|--------------------------|--------|
| U.S.P. salicylic acid | 10 Gm. |
| Acetone U.S.P. | 33 cc. |
| Ethyl Alcohol 85 percent | 33 cc. |
| Glycerol U.S.P. | 33 cc. |

This solution can be kept for months in a screw cap, not cork, bottle. One to three applications cure most cases of Epidermophytosis (athletes foot) — W. B. ALBERT, Ph.D., in *Southern Med. J.*, June, 1944.

Irrigating the Ear

• Eczema of the skin of the external auditory canal may favor the retention of cerumen. The penalty for "washing out the ear" for removal of wax in certain cases of eczema may be a weeping canal membrane for weeks or months. From the patient's point of view, this is just as bad as syringing cerumen from a normal canal having an open perforation in the drum and a dry middle ear—with intractable middle ear drainage resulting.—F. L. WELLS, M.D. in *M. Clin. North America*, Sept. 1944.

Treatment of Asthma

• Five minims of adrenalin 1:1000 solution is given at onset of attack, and 2 minim doses are given at end of ½, 1, 2, 4 and 8 hours in order to prevent the return of symptoms.

Small doses given before symptoms recur are more useful than large doses given after they reappear.

A tablet of ephedrine hydrochloride is given every 6 hours orally for four doses (½ to ¾ grain).

Cold air irritates asthma, therefore warm air is necessary. Strong black coffee in the morning or strong hot alcohol in the evening are good stimulants. Massaging the back is often comforting (heat from an infra-red lamp, diathermy or ordinary hot pad to the back occasionally stops an attack—Ed.)

In patients who are not sensitive to aspirin, 10 to 15 gr. often is of great aid in relieving an attack.—A. J. MOSKOW, M.D. in *Sud Afrika Tyd. v. Gen.*, Mar. 25, 1944.

Backache

• Low backache in the male responds remarkably well to urethral dilation and massage of the prostate gland. Relief of low backache and pelvic discomfort often follows prostatic massage and the introduction of sounds even when the prostatic secretion shows few or no pus cells and strictures of the urethra are not detectable. Instillations of 2 cc. of 1 or 2 percent solution of silver nitrate are given directly into the deep urethra.—E. G. BALLENGER, M.D. (Atlanta, Georgia), in *J.A.M.A.*, Nov. 6, 1943.

NEW BOOKS

Any book reviewed in these columns will be procured for our readers if the order, addressed to **CLINICAL MEDICINE**, Waukegan, Ill., is accompanied by a check for the published price of the book.

OPERATIONS OF GENERAL SURGERY

Orr

OPERATIONS OF GENERAL SURGERY. By Thomas G. Orr, M.D., Professor of Surgery, University of Kansas School of Medicine, Kansas City, Kansas. Philadelphia and London: W. B. Saunders Company. 1944. Price, \$10.00.

This book is of value to general surgeons and general practitioners performing surgery.

There are brief descriptions and step-by-step illustrations showing every common and many rare operations on all parts of the chest, abdomen, head, neck and extremities.

Chapters are included on wound healing, treatment of fresh wounds, sutures and knots, amputations, skin and subcutaneous tissues, muscle, fascia and buras, tendons and tendon sheaths, thorax and respiratory system, breast, circulatory system, abdominal incisions, digestive system, hernia, bones and joints, nervous system, sympathetic nervous system, lymphatic system, endocrine system, congenital anomalies, genito-urinary system and female reproductive system.

Because of the brevity of descriptions, some operations are made to appear easier than they are, e.g. pneumonectomy.

In one volume are grouped all the commonly accepted operations together with many good illustrations showing their technic and well seasoned remarks on anatomy, indications, dangers and safeguards, and best methods of technic.

PSYCHOLOGY OF WOMEN

Deutsch

PSYCHOLOGY OF WOMEN. By Helene Deutsch, M.D. Associate Psychiatrist, Massachusetts General Hospital; Lecturer, Boston Psychoanalytic Institute. New York: Grune and Stratton, Inc. 351 Fourth Avenue). 1944. Price \$4.50.

This book is of value to psychiatrists, psychologists, and students in those fields, physicians interested in mental processes of their girl and women patients, exceptionally well informed laymen including parents.

The contents give a survey of the psychological processes of the female from prepuberty, thru early puberty, puberty and adolescence, menstruation, including chapters on eroticism (the feminine woman), feminine passivity, feminine masochism, the "active" woman (the masculinity complex), homosexuality and the influence of the environment.

This book is written from the psychoanalytic standpoint, with the advantages and disadvantages that are thus implied, although the author calls attention to several of Freud's errors and corrects them.

The author's grouping of various types of personality responses and reactions to environment are useful in bringing out similar features in apparently differing women, but of course, cannot be used as rigid standards.

Such a book helps one to stand off and look at the field of normal and abnormal psychology.

gy, and to realize again that the patients seen by the physician are the markedly abnormal ones. There is not one of us who does not have emotional conflicts, from infancy onward, which are usually kept in approximate balance and perhaps it is just as well that 99 of 100 persons do not know the underlying motive for their actions for what they really are.

Any thoughtful physician is glad that Freud and his disciples have clarified many complex problems but cannot help feeling that idealism is difficult enough in this imperfect world.

The director of an internationally known school for advanced thought has said that the savages used to scare devils away by placing dung on the chronic aching head, but the psychoanalysts dredged up mental refuse for the same purpose, or worse implanted it by suggestion (without meaning to, of course).

We look at the world and other people through the windows of our experience, which means that we can see certain things clearly, others are distorted by episodes in our past. This is just as true of authors as of other people, if they only recognized it.

This book is of real value in helping the physician and parent to realize the true significance of apparently puzzling behavior in the little girl and adolescent.

INTRAVENOUS ANESTHESIA

Adams

INTRAVENOUS ANESTHESIA. By R. Charles Adams, M.D., C.M., M.S. (Anes.), Associate in Section on Anesthesiology, Mayo Clinic, Rochester, Minnesota—Paul B. Hoeber, Inc., 1944. Price \$12.00.

This is an extensive monograph on the history and development of intravenous anesthesia, the use of various anesthetic agents intravenously, their indications and contraindications, technic of administration, management of complications, and use associated with other methods, such as local anesthesia.

The pictorial section illustrating various technics is very instructive. For the anesthesiologist and surgeon who wish to have all the details of intravenous anesthesia at hand, this book is recommended.

TREATMENT OF FRACTURES

Caldwell

TREATMENT OF FRACTURES. By Guy A. Caldwell, M.D., F.A.C.S., Professor of Orthopedic Surgery, Tulane University, New Orleans, and others.—Paul B. Hoeber, Inc. 1943. Price \$5.00.

This is a handbook for every day use and every day practice. A usable method is presented for each type of fracture. Treatment is discussed in brief, direct manner; excellent illustrations show exactly how to do it.

The newer methods, including the hanging cast for shoulder and upper arm fractures, are included.

EXERCISE FOR FITNESS

Colestock-Lowman

FUNDAMENTAL EXERCISE FOR PHYSICAL FITNESS. By Claire Colestock, A.B., M.A., Assistant Director Physical Education, City Schools, Pasadena, California and Charles L. Lowman, M.D., F.A.C.S., Chief of Staff, Orthopedic Hospital, Los Angeles, California. Published by A. S. Barnes and Co., 1943. Price, Fifty cents.

Many pages of exercises for the improvement of defective posture and other physical defects are presented in poorly digested form.

THE ART OF RESUSCITATION

Flagg

THE ART OF RESUSCITATION. By Paluel J. Flagg, M.D., Chairman, Committee on Asphyxia, American Medical Association; President and Founder, Society for the Prevention of Asphyxial Death, Inc.; Director of Pneumatology, New York World's Fair 1939; Author, "Art of Anesthesia"; Consulting Anesthetist to St. Vincent's Hospital, the Woman's Hospital, Sea View Hospital, Jamaica Hospital, Flushing Hospital and many others.—Reinhold Publishing Corp. 1944. Price, \$5.00.

"The purpose of this book is an intensely practical one. It is an attempt, based upon more than twenty-five years of intimate experience with the unconscious patient, to tell the reader what to do when faced by an acutely asphyxiated patient about to die." The author's interest and outstanding work in the prevention of asphyxial death are well known. His aim, stated in the quotation given above from his preface, has been well achieved. Enough physiology is presented to give the reader an intelligent approach to the problem. The various conditions under which asphyxia is likely to occur are dealt with in separate chapters. Emergency measures are recommended and set forth in detail, but emphasis throughout is placed on an understanding of the essential disturbance and appropriate handling of the specific case. The usefulness of mechanical aids in particular situations is duly recognized, though the attitude of blind dependence on them is not encouraged.

There is a brief history of the development of techniques for resuscitation, and a longer section in which the various types of apparatus now in use are described, with good illustrations. The author gives a survey of the measures already adopted for the prevention of asphyxia in various fields, for example in fire-fighting, in mining, in the army and in the navy. He gives many useful suggestions for the improvement of emergency service and for the training of personnel.

The book shows evidence of a certain lack of thoroughness in proofreading, in that the number of minor errors, most of them misspellings, seems unusually large. As a whole, however, it impresses this reviewer as being sound, timely, and practical.—T. E. B.

A TEXTBOOK OF PATHOLOGY

Moore

A TEXTBOOK OF PATHOLOGY; Pathologic Anatomy in Its Relation to the Causes, Pathogenesis and Clinical Manifestations of Disease. By Robert Allan Moore, Edward Malinckrodt Professor of Pathology, Washington University School of Medicine, Saint Louis. Published by W. B. Saunders Co., 1944. Price, \$10.00.

This book is of interest to those interested in knowing how a disease produces pathologic changes and the types of lesions thus produced; pathologists; true surgeons; diagnosticians.

Here one finds summarized the preclinical studies (anatomy, physiology, physiological chemistry, and bacteriology) together with the clinical aspects concerning disturbances in the body. All pathologic processes are discussed, and very well illustrated.

The contents include general pathology, diseases caused by living agents, physical agents and chemical agents; diseases related to pregnancy, disease caused by deficiencies of vitamins or specific deficiencies, diseases of unknown or obscure cause.

Throughout the book, emphasis is placed on the signs and symptoms that result from various diseases.

PHYSICAL BIOCHEMISTRY

Bull

PHYSICAL BIOCHEMISTRY. By Henry B. Bull, Ph.D., Associate Professor of Physiological Chemistry, Medical School of Northwestern University, Chicago.—John Wiley and Sons, Inc., 1944. Price, \$3.75.

To suggest that he be familiar with the technical matter contained in this book will undoubtedly depress the average practitioner, who has all he can do now to keep abreast of medical progress in the more immediately useful fields of diagnosis and therapeutics. But the fact remains that knowledge of this sort forms the indispensable matrix for the understanding of such everyday clinical phenomena as fever, gastro-intestinal indigestion, acidosis and alkalosis, serologic testing, uremia, edema and the treatment of shock—as well as of the physiologic normal functioning of all cells, humors and body organs.

From the broad field of physical chemistry, the author has carefully selected for presentation a range of topics pertinent to the understanding of living systems. Discussed in detail, with an abundance of graphs and charts, are such matters as: Atoms and Molecules; Energetics; Reaction Kinetics; Electrostatics and Dielectrics; Ions in Solution; Electromotive Force Cells; Acids and Bases; Oxidation-Reduction; Electrical Conductance; Electrokinetics; Surface Activity; Colloidal Solutions; Viscosity and the Flow of Liquids; Diffusion; The Ultracentrifuge; Osmotic Pressure; Membranes and Cell Penetration; and Colloidal Structures. This material is an outgrowth of a lecture course given to graduate students at Northwestern University Medical School.

The style is lucid and clear. A most commendable feature is the foot-noted bibliography up-to-date and excellent, designed to guide the investigator to the key review articles in any special sub-field in which he may desire to work.—J. J. W.

AMERICAN MEDICAL PRACTICE

Stern

AMERICAN MEDICAL PRACTICE. In The Perceptions of a Century. Studies of The New York Academy of Medicine. Committee on Medicine and the Changing Order. By Bernhard J. Stern, Ph.D., Lecturer in Sociology, Columbia University; Visiting Professor of Sociology, Yale University. The Commonwealth Fund, 1945. Price \$1.50.

The practice of medicine today cannot be like that of 20 years ago because the people to be treated, the conditions under which medicine is practiced, living conditions, working conditions, all are different.

The physicians who have had time to stop and think in the rush and pressure of practice have long vaguely realized that all was not well with the medical care of today. Here are assembled the facts, figures and statements which show how these changes have gradually come about. The author does not claim that any one type of care will be a cure-all, he merely lets the facts speak for themselves.

How many patients does the average general practitioner care for in a week? What is his income? How many of his bills are never collected? These are specific questions and they receive specific answers.

What are the four leading causes of death and disability in the negro? All of these causes are fairly readily diagnosed and treated, if the care is given.

The author has worked into one smooth pattern the social, economic and medical changes during the last century. Would that every physician could or would leaf through this small volume.—R. L. G.